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A STUDY OF EIGHT HUNDRED AND FIFTY CASES OF SCARLET FEVER WITH A MORE PARTICULAR CONSIDERATION OF SEVENTY-ONE FATAL CASES.

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PART I

NO attempt has been made in this article to offer a complete presentation of the subject of scarlet fever, nor is reference made to the literature of the subject; rather has the attempt been made to bring together in orderly form material for the study of the disease, which has been gathered by the writer from his own direct experience in the wards of a city hospital for infectious diseases, to the end that this might be of use to others studying various aspects of the subject; and as regards certain, but by no means all, of the data so collected, to record deductions of clinical value, that might legitimately be made. While the endeavour has been to subordinate the statistical nature of the study, it may yet be permissible to state that the figures given are the outcome of the tabulation of some twenty-five thousand individual data.

This series consists of cases taken as they entered the wards of the Alexandra Hospital, Montreal, from its opening in July, 1906, to the end of 1909. There were 431 females and 419 males, ranging in age from three months to forty-two years. There were but seven cases in children less than one year old. However, the liability to the disease rises quickly after the first year, reaching its highest point about the fourth year. It must be said that from the beginning of the

fourth year till the end of the ninth, the liability to the disease is great, about sixty per cent. of all this series being in those years. No one year between the ages of four and nine has any marked preponderance. By half decades, the figures of frequency of occurrence are as follows:

Up to the end of 5th year	29	per cent.
5th to 9th "	45	"
10th to 14th "	12	"
15th to 19th "	5	"
20th to 24th "	less than 4	"
25th to 30th "	2·6	"
31st to 34th "	·7	"
35th to 39th "	·3	"
40th upwards "	·1	"

Mortality

Among the 850 cases of the series, sixty-eight died, which is exactly eight per cent. of the total. This is distinctly a favourably low hospital death-rate. It is lower, of course, than the general figures in cities and in countries at large, but, on the other hand, is much higher than the figures usually obtained in private practice among the better classes.

The Infection

An attack of scarlet fever is generally considered to confer immunity; there are, however, nine cases in which the attack was stated to be a second one, three of whom had been treated in hospitals for contagious diseases, Paris and Glasgow included. One case was said to have gone through the disease one year previously, three, five years before, and one, ten years before. Four cases of apparently genuine relapse occurred. These may be noted briefly:

Case 1. Thirty-first day: headache; vomiting; fever, maximum 103°; typical rash on face, neck, body, deeper over folds; desquamation after both attacks.

Case 2. Nineteenth day: little ill-being of patient; rash on body; circumoral pallor; fever, maximum 103°; throat sore; tongue coated, papillæ prominent; punctæ on palate.

Case 3. Thirty-first day: rash on neck, trunk, limbs; tongue coated, papillæ prominent; palate punctate; fever, maximum 104°; desquamation of first attack still marked.

Case 4. Fifteenth day: rash on body, face, neck, limbs; tongue red, papillæ prominent; palate punctate.

Twenty-four of the so-called "return" cases occurred,—that is,

where the disease was apparently contracted from patients discharged from the hospital within a short time. This gives a percentage of 2·8, which is higher than is usually found. They occurred from five to twenty-one days, average thirteen, after the previous discharge. One case contracted the disease from a child who was sent out apparently well, but whose ear discharged four days after his exit from hospital. The alternative explanations of which these cases are susceptible are, of course, known to us, but it is hardly of interest to urge them.

Experience of others, confirmed by one's own, leads to this presentment of the matter: incomplete desquamation and discharging wounds, ears, or mucous surfaces are sources of danger to others; and, in addition, a person completely desquamated, with no discharging surfaces, cleansed as thoroughly as possible, can yet communicate the disease to children with whom he or she comes in close contact: if a week or two be not allowed to elapse after discharge, before such contact, there is yet danger, though from what source one cannot say. In the Alexandra Hospital each patient on discharge is accompanied by a circular containing this cautionary advice. It seems impossible to guarantee thorough disinfection against scarlet fever, although recently there is evidence to show that desquamation is not the greatest source of danger; and it is probable that experience may yet enable us to discharge patients safely at a date in the disease earlier than is now done.

Onset

The common symptoms of the onset of the disease are sore throat, vomiting, and headache. The very young often do not put their complaints into words, and, therefore, figures underestimate their frequency. In 707 cases in which note has been made of the presence or absence of this group of symptoms, sore throat was present in 544, or seventy-seven per cent., definitely stated to be absent in nineteen, less than three per cent., not complained of, and presumably not worthy of note in 145, twenty per cent. Vomiting was noted in 431, or sixty-one per cent., was definitely absent in sixty-seven, or nine per cent., and was not noted, and, therefore, presumably absent, in 209, or thirty per cent. Headache was present in 323, or forty-six per cent., definitely absent in eighteen, less than three per cent., and not complained of in 365, or fifty-one per cent. Indefinite symptoms, such as malaise, are not often volunteered by children, but it was present in twelve per cent. of cases. Diarrhœa was a symptom of onset in thirty-three, a little over six per cent., of the cases; chills, in nineteen,

XUM

or 2·2 per cent.; convulsions were present in only seven cases, less than one per cent. The presence of coryza complicates the diagnosis at times, but is rare, happening in less than two per cent. of cases. The other rarer signs or symptoms of onset are pains in the abdomen, eleven cases; the back, three; the legs, two; the ears, the eyes, the neck, or the chest. Itching of the skin was the first symptom in four cases.

A definite conjunctivitis is often observed, but is not a sign of much worth; it was present in seventy-nine cases, or 9·3 per cent., and is found relatively oftener in adults than in children. Photophobia is rare.

The Specific Signs of the Disease

The signs that are considered specific of scarlet fever are (1) the rash, (2) the appearance of the tongue, (3) the appearance of the throat, and (4) the enlargement of the glands. These will be considered in detail, after premising that the rash and the characteristic tongue are the most useful, the throat a poor third, and the glandular enlargement a sign of very doubtful verity.

The Rash

In 685 cases, with exact notes of the time of onset of the rash, it was found as follows:

1st day	26·7	per cent.
2nd "	43·2	"
3rd "	20·8	"
4th "	6	"
5th "	2	"
6th "	less than 1	"

Two, at least, of these late-coming rashes are perfectly authentic, as they were found on the fifth and sixth days in nurses in the scarlet fever wards, where the suspicion existed from the onset, and the rash was carefully and constantly sought for from the first. It will be noted that in ninety per cent. of cases the rash appears within seventy-two hours, or less, from the first symptom, and that the second day is the most likely time of its appearance.

The extent and site of the rash is variable, but it may be said that in nearly all cases where the rash is marked, it is universal, with the exception of the region around the mouth, the exemption of which has given rise to the sign known as "circumoral pallor." The palms and soles are not exempt from the diffuse flushing, though the punctate rash is not to be seen on them; the folds of the body, such as the axillary,

the inguinal, and the popliteal, tend to show an intensified rash, as do also the buttocks and the insides of the thighs.

Some have said that there can be "scarlet fever without a rash," but, for my own part, I have seen nothing to substantiate the statement: in slight cases the rash goes and returns, and unless the patient were constantly inspected in perfect light, artificial light being almost useless for the purpose, it would be impossible to say that a rash had not been present.

The trunk is involved by the rash always, or nearly so: in ninety-seven per cent. of cases, it has been definitely stated to show the eruption: twice only it was declared to be absent, and it must be recalled that these, in all probability, were cases which showed a transitory rash at some time when no physician was near to observe or note it. The limbs were noted as showing the rash in only ninety-three per cent., and this seems approximately correct, as they at times appear to escape, especially in the lightest cases. Four times a rash on the limbs has been definitely stated as absent. Rash on the neck and head is by no means so universally present: in 487 cases it was found in 38·2 per cent. It was noted as definitely absent in twelve per cent. These figures doubtless underestimate its frequency, for often it is present behind the ears, and this area may not be inspected. The forehead is often spared. In the first three hundred cases of this series the observations upon the rash on the face were evidently very fragmentary and inexact, and they are, therefore, excluded from the percentage just given.

Accompanying the rash, yet not dependent upon it, is a marked whiteness of the area around the mouth,—the so-called "circumoral pallor." This is very frequent, and although it often is due to contrast with the chin, upon which may be the rash, it can yet exist without there being any chin rash, the chin being flushed in common with the cheeks. Of 491 cases with definite notes, "circumoral pallor" was present in fifty-six per cent., noted as definitely absent in fifteen per cent., not observed, and therefore presumably not present, in the remaining twenty-nine per cent. It appears as if this sign could be counted in more than half of all cases.

The rash is at times punctate, and at others, erythematous, but one is tempted to say that nearly every case at some time shows both, and frequently simultaneously, the areas between the punctæ being covered by a blush. Further, speaking from recollection, it seems as if most slight rashes tend to be punctate. The rash is occasionally sudaminal, vesicular, or miliary, whichever name one chooses to adopt, according to the size of the tiny vesicles, and at times in a severe rash

XUM

one sees the little vesicles yellow, as if pustular. The most interesting variety of the rash is the petechial or hæmorrhagic: this was seen in 2·7 per cent. of the cases, and it is notable that of twenty-three cases exhibiting it, sixteen died. At times it was noted, often in the folds, such as the elbow or axillæ, as a kind of accident, but it may be said that any widespread petechiæ indicate in scarlet fever, as in other septicæmias, the extreme gravity of the case.

To sum up, the rash is a good indication of the severity of the infection: a light rash is a desirable thing, as it indicates generally a mild case. Severe attacks—the true fulminating cases—may produce death before the rash attains any marked intensity: one such case, only, has come under my notice, and it is not included in this series. The popular supersition relative to the "rash going in," or, more graphically expressed, "striking in," does not appear to be borne out in actuality; it may, however, have this degree of reason it in, that since the rash depends upon the activity of the circulation, its intensity may lessen with a failing heart, and thus fading of the rash may be a prognostic sign of grave importance. My own experience has not led me to see this, but rather to observe that under these circumstances the skin becomes darker, duller in hue, cyanotic.

Rules for the recognition of the rash of scarlet fever, as usually laid down in text-books, have not proved very useful: in an easy case they are not necessary, and in a difficult case, too often not applicable. Perfect simulation of the rash has been seen twice after the ingestion of turpentine, but from other drugs, such as quinine, strychnine, corrosive sublimate, and iodoform, has not come within my experience. Erythema, after antitoxin, has also been rare, but so-called "toxic erythema," common. The latter may simulate the rash of scarlet fever exactly, and the case generally has to be decided upon its other features. One case presented great difficulty: it was either scarlet fever followed immediately by typhoid, or typhoid fever with a toxic erythema, in which the reddening of the throat was merely pharyngitis. The tongue was not definite, and the patient went through typhoid fever with a slight desquamation.

Secondary, or recurrent, rash occurred eleven times, in two of these a third recurrence happening. The rash was sometimes accompanied by a red throat, punctæ on the palate, and was generally unaccompanied by any malaise or feeling of illness. In one of the cases a burn was present, in which case it may have been merely a "toxic erythema." The days on which the recurrence happened ranged between the ninth and thirty-ninth, average twentieth day. The onset of well-marked symptoms in patients who had been admitted

with ill-defined symptoms occurred four times, and these must be considered as cases in which the primary diagnosis had been wrong and the patients had contracted the disease in the wards.

The Appearance of the Tongue

This is, perhaps, the most definitely useful of all the signs in a case difficult of diagnosis. The "strawberry tongue," as a term, is widely and popularly in repute, but it is open to question whether the coated tongue, with papillæ appearing through the coat, which resembles distantly a thoroughly unripe strawberry, or the red tongue, with the enlarged, sometimes yellowish papillæ, which resembles yet more distantly a ripe strawberry, is meant. Probably the latter is what is meant by the term, yet the former is the more frequently seen in scarlet fever. Some authors apply the name "raspberry tongue" to the red, papillated tongue, a term which is not more happily devised than the other.

The tongue is generally at first coated, with prominent papillæ, red at the edges and tip, and may clear rapidly, when it looks beefy in its entirety; or the body may be of the usual colour, with the central furrow red, as well as the edges and the tip. The most certain character is that the papillæ on the tip, and for an inch or half an inch on each edge, are enlarged and prominent, and this character is not readily or quickly lost. At times the diagnosis is possible from this when the other striking signs, such as the rash, have disappeared.

Careful notes upon the appearance of the tongue are to hand in 732 cases: ten times, or 1·3 per cent., the tongue was neither coated nor red; 572 times, or seventy-eight per cent., it was coated; and 150 times, or twenty per cent., red. Notes upon the enlargement of the papillæ are available for statistical purposes in only 487 cases, in which they were observed not to be enlarged in fourteen, less than three per cent., and were noted as definitely prominent in 417, or eighty-six per cent. The remaining cases, which are not noted, are probably left out inadvertently, and from observation one is tempted to say that eighty-six per cent. is a considerable understatement. It will thus appear that the cases in which the tongue is not reddened, or the papillæ enlarged, are exceedingly rare, and that it is not exaggeration to say that here is the surest and most frequent characteristic of the disease.

The Appearance of the Throat

The sore throat complained of is generally visibly changed: the pillars of the pharynx, the tonsil, and the posterior wall are reddened,

sometimes quite bright in tint, but often, if there be no more marked sign than this, it is difficult to say that there is anything but an ordinary pharyngitis. There is sometimes œdema of the uvula and other parts, but this is in no sense characteristic; exudate on the tonsil or a definite membrane, not being a necessary part of a scarlet fever throat, serves only to complicate affairs. Pharyngitis is so common in this country, especially in winter, that one must be cautious about making definite statements on the authority of this alone. More trustworthy is the palate. The soft palate is often bright red, as is occasionally the posterior part of the hard palate, and in a fair percentage of cases there are punctæ on one or the other or on both. The occurrence of these punctæ would be a very useful sign of the disease, if it were not for the fact that one sees them also in German measles.

Of 752 cases, with proper notes upon the throat, it was seen to be reddened in 686, or ninety-one per cent.: in seven only, less than one per cent., it was definitely stated to be apparently unaffected. In the other cases, it had not been noted. As to the palate, it was reddened diffusely, or was punctate, in 342 cases out of 495, or seventy per cent.; it was not affected in eight per cent., and the rest of the cases have not been noted. The details as to the frequency of the punctate eruption on the palate are available only in the latter part of the series, and show it to be present in nearly thirteen per cent. Membrane or exudate was present in 210, or twenty-eight per cent. In fifty-two of these, diphtheria was found, leaving twenty-one per cent. of "straight scarlet fever" throats showing more than simple redness. There were many throats without exudate, which showed the bacilli of diphtheria. This, however, will be dealt with when speaking of the associated disease.

The Enlargement of Lymph-Nodes

As stated above, this has never seemed to me a very certain sign; the nodes in children are generally readily palpable, with the exception of the epitrochlear groups, and a moderate change is, therefore, hard to detect. The observations in this series show that of 748 cases there was a general enlargement in 557, or seventy-four per cent., of which about one in thirteen is remarked as being of very slight degree. A local enlargement of the nodes of the neck was found in 149 more, or twenty per cent. In forty-one cases, or 5·4 per cent., it is definitely stated that no enlargement had occurred. These figures are very sweeping, it is true, but it is at once evident that the question is entirely one of how accurate the observer happens to be, and my own feeling is that the sign is not a very safe one. Actually, there is no doubt that the

lymph nodes are enlarged, but if to an appreciable extent is debatable. The spleen would be likely to show enlargement, if swelling were very marked in the lymph structures in general; but of 429 cases examined, it was not palpated in 385, or ninety per cent. If from the remainder be deducted the people who ordinarily have a spleen that is palpable, it will be evident that not many spleens become palpable by reason of scarlet fever.

Duration

The duration of the febrile period in 507 cases of recovery, which were relatively uncomplicated, that is, where there was no long-continued fever lasting beyond the reasonable time during which the scarlet fever might be supposed to be operating, was on the average 7·4 days: this is not much less than the figure 9·82 days, which was the average of all cases, 782 in number, that recovered. Similarly, the average time from onset to discharge was 54·4 days for 606 cases; and if the complicated cases be taken out of this series, it reduces the average for 515 cases to 52·8 days.

Based upon these figures, scarlet fever may be called a seven-days fever, with an additional six weeks' convalescence. The degree of fever is comparatively low, as in the majority of cases the maximum after entry to the hospital was less than 103°. The maximum height of fever was as follows:

107° or over	2 cases
106–107°	11 cases
105–106°	50 cases
104–105°	119 cases
103–104°	137 cases
102–103°	184 cases
101–102°	151 cases
100–101°	117 cases
99–100°	19 cases

One of the cases shown above as over 107° attained an ante-mortem temperature of 110°F., and it is a significant fact that of all the cases whose fever reached 105° or more, sixty-five per cent. died.

As a rule, the hospital chart indicates that the fever at admission is higher than any point subsequently reached. The temperature gradually descends with morning remissions until normal is reached. This holds only for uncomplicated cases, for in septicæmic cases the fever in secondary infection may easily surpass the fever of the scarlet fever proper. Careful notes have been made, in this series, of the

XUM

temperature subsequent to the course of the disease, and it is very remarkable how constantly the temperature chart of children under eight years of age shows irregularities. We shall attempt to indicate the degree of these.

If we judge normal temperature to be that which remains below 99°, there is but one case in eleven whose temperature remains normal from the end of the fever until discharged from the hospital. Of those carefully studied with regard to this, forty-one cases were free from subsequent rise, and 444 showed such. Of the forty-one, twelve were in children under ten years, and twenty-nine in persons over that age; expressed otherwise, only one in every fifty-two under ten years escaped a subsequent rise of fever, while one in every eight over that age did so. To what is this subsequent fever due? In 225, a probable cause was found, and in nearly as many, viz., 219, none such could be stated. That is, in almost fifty per cent. of the cases, there arose some disturbance of temperature of which the cause was not discovered. The 444 cases are subdivided as follows:

An infrequent rise to 99°, or slightly more	52
Frequent or continuous rise to 99 or 99½	204
Infrequent rises to 100 or 100½	9
Frequent rises to 100 or 100½	88
Frequent rises to 101	23
"Steeples," i. e., sudden, often high temperatures not sustained, producing a "church-steeple" on chart	25
A definite course of fever	43

Among the causes which were considered responsible for the fever in convalescence were the following: 276 cases,—adenitis, 81; otitis, 60; nephritis or albuminuria, 27; inflammation of mouth or nose, 36; joints, 6; bronchitis, 9; abscesses or other infected foci, 22; and a number of accompanying conditions, such as diphtheria, pneumonia, etc.

The practical conclusion to be drawn with reference to these unwieldy figures is that, leaving adults out of the question, most children are prone to show irregularity of the temperature line in convalescence: a rise must be the signal for a thorough physical inspection, remembering that otitis and nephritis are the complications one is most apt to overlook, that a quite inconsequent, glandular enlargement or increased inflammation of the throat may give a formidable rise of temperature, and that the appearance of the patient ought always to have due weight against the evidence of the thermometer. Thus forewarned, there will yet remain many cases where no lesion is found. If the physician try to explain these cases he is beset by anxieties about

incipient tuberculosis that will keep him mentally uncomfortable without adequate return to himself or the patient for his carefulness. It is right to remember that, especially in young children, the normal line on the chart ought to be a broad band instead of a line, as Rudolf has aptly insisted.

Associated Diseases

Diphtheria or the Presence of Diphtheria Bacilli. Diphtheria, as a complicating disease, will be dealt with in speaking of the fatal cases, but here it may be pointed out how frequent an occurrence it is. The number of occasions on which it has been found in this series is large, but this is due to the very frequent cultures that are made from the patients' throats. As a routine, a culture is taken on admission, and three successively before discharge. If one add to this the taking of a culture for every sore throat occurring during convalescence, it will not seem so strange that it should be often found. In the series of 850 cases, I have notes of diphtheria bacilli being present in 150, that is, in one out of every six. No doubt, some of these would prove to be pseudo-diphtheria bacilli, because diagnosis is made from the culture, never from the original smear, but no further differentiation is done. Still, this figure indicates how disturbing an element we have here.

Eighty-two cases were admitted with diphtheria bacilli in the throat or nose, that is, nearly ten per cent. of all cases. Sixty-eight cases did not show a positive culture on entering, but did subsequently, of whom fifty had no signs of diphtheria, leaving eighteen who may be said to have suffered from diphtheria contracted in the hospital. The day of onset of the disease varied from the seventh day after entrance to the eighty-sixth, so that all of these may reasonably be supposed to have contracted the disease in the wards. Two of them proved fatal, although it is only fair to state that one was exceedingly ill with scarlet fever. There is no reason to suppose that any of these were the victims of infection brought from the diphtheria wards of the hospital, when one considers the great prevalence of cases introduced with active bacilli in the throat. At all times these cases have been housed, as soon as discovered, in wards quite apart from those occupied by uncomplicated scarlet fever, and during a considerable part of the time the prophylactic use of anti-diphtheric serum has been carried out. As is stated subsequently, nearly all of the cases here detailed would have escaped notice entirely, had it not been for the constant employment of culture methods, and thus this paragraph, with its high percentages, bears little reference to clinical diphtheria.

XUM

MEASLES. Measles complicated the disease but twice in the series, breaking out on the eighth and twelfth days of the fever after the rash had disappeared.

ERYSIPELAS. Erysipelas was present thrice in the series.

CHICKEN-POX. One small epidemic of seven cases of chicken-pox occurred.

OTHER DISEASES. Other complicating diseases were: tuberculosis, two; typhoid fever, two; cerebral tumour, one. One of the cases of typhoid fever suffered a relapse and had intestinal hæmorrhage; seven cases were suffering from burns of the skin; nine had had recent operations; and three had been recently vaccinated,—a total of nineteen, which might be considered to come under the heading of "scarlet fever in the wounded," as it is termed.

COMPLICATIONS

The most important complications to be considered are nephritis, otitis media, and adenitis. Frequent although the inflammations of the respiratory tract are, they are, nevertheless, in most cases, of secondary importance.

OTITIS MEDIA. Considering cases of all degrees of severity, there have been 170, a percentage of twenty. Of these no discharge occurred in forty-five, leaving an actual occurrence of 125 suppurative cases, or 14·7 per cent. Out of 159 cases, both ears were affected in fifty-one, the right alone in sixty, and the left alone in forty-eight. The time at which the otitis began in 146 cases is to hand: thirty-seven times it was in the first week, forty-eight times in the second, eighteen times in the third, twenty-one times in the fourth, eight times in the fifth, five times in the sixth, twice in the seventh, seven times later than the seventh week, once being as late as the hundredth day.

ADENITIS. Adenitis as a complication is considered to be present when there is a very undue inflammatory enlargement of the cervical and submaxillary glands, whether this occurs after the first acuteness of the throat symptoms has passed away, or persists after the time that angina might be expected to have ceased. The swelling of the glands is not necessarily attended by exacerbation, or even a continuance of the inflammation in the throat, nor does it very often spread from the glands in the form of cellulitis or subcutaneous tissue. The glands become large, hard, smooth, and tender, are sometimes discrete, but are oftener moulded into a large mass.

This series shows 171 cases, or twenty per cent., of which but eighteen required incision and drainage. The indications for operation upon such glands will be discussed later, but it must be admitted that

not all of those opened actually contained pus. These local glandular inflammations are nearly always attended by a considerable degree of fever, often in young children by a degree of fever which seems out of proportion to the lesion.

Rhinitis. This, as well as infections of the mouth and throat, will be dealt with more particularly in the part of this paper dealing with fatal cases. It may be stated here, however, that a notable rhinitis was present eighty-nine times, or ten per cent., nearly half of which were extremely severe grades of infection. This figure includes a goodly number of fatal cases. With young children it is interesting to note that severe infection of the nose or of the mouth is almost certain to be followed by impetiginous eruption on the face and infection of the nail edges of the fingers.

Pharyngitis and Tonsillitis. Twenty-three cases showed a marked septic infection of the mouth and the throat, apart from diphtheric infections, and not in any case coinciding with the cases of severe, nasal infection mentioned above. Thus there have been 112 cases in which the mouth or the nose or both were seriously infected, giving a frequency of one case in eight. The edges of the mouth externally are frequently found to break out in an eruption sometimes herpetic in nature but more often of a definitely infective kind. This was observed fifty-four times, that is, once in sixteen cases.

Tracheitis. Tracheitis is quite frequent, and is generally evidenced by nothing more than a cough of greater or less severity. This was found in 133 cases, or about one in every six. Exceptionally, examination of the thorax discloses that an actual bronchitis is present, as was found in fifty-two cases, or one in every seventeen.

Pneumonia. Fifteen cases of pneumonia occurred, only two of which were of the lobar variety. It is notable that nine of these fifteen cases died. Pleurisy was found only seven times.

Arthritis. This interesting complication was found thirty-six times, or 4·2 per cent. The joints are only painful at times, but they may be reddened, swollen, tender, and may show definite effusions. Multiple joints are affected in most cases, the wrists and knees being the most often attacked. Quite rarely were the shoulders, elbows, fingers, or ankles the seat of the complication. The vertebræ were affected thrice, twice the cervical, and once the dorsal region. Cases happened at all times from the third to the forty-seventh day, the greatest liability appearing to be in the second, then the first, week.

Derangements of the Alimentary Tract. It will be shown, when treating of the fatal cases, how ill-omened a sign is serious disturbance of the alimentary tract. Excluding fatal cases, however, we

XUM

find that of cured cases only about one in eight shows any such disturbance. One case in sixty has both vomiting and diarrhœa with green stools; one in twenty has green stools,—these are infants who are severely ill; and one in sixteen has vomiting,—figures which indicate how comparatively rarely these signs are present. Scarcely any of the thirty-two cases who vomited, did so repeatedly, a single attack or several attacks on the same day being noted. Any infant who is severely ill with scarlet-fever is almost certain to exhibit the greenish colouration of the fæces, often with excess of mucus, and occasionally accompanied by blood.

The Cardio-Vascular System. This series tends to indicate that myocardial changes are more common than endocardial in scarlet fever. It is necessary to have accurate knowledge of the size of the heart, and of the character of the sounds at onset, lest signs be credited to scarlet fever which are already present when the attack commences. At entry, noticeable murmurs have been found in the heart in eighty-three cases, which did not change during the disease, and which, therefore, are not considered at all in this connexion: nor are fatal cases considered in compiling these figures. Twenty cases gave evidence of dilatation during the course of, and presumably as a result of, the disease. Twenty-six developed an irregularity of the pulse without notable enlargement; in seven this was of the nature of sudden collapse, four times with marked cyanosis. In nine cases murmurs were acquired during the course of the disease, but as there is always some doubt as to whether these murmurs have not been previously overlooked, especially as no other signs accompanied the murmurs, these cases are not included, but in addition a diagnosis of a fresh endocarditis, or of an exacerbation of a previous endocarditis, could be made in ten cases. To sum up, fifty-five cases, or 6·4 per cent., showed some disturbance of cardiac mechanism, which proved temporary: in their relative frequency myocardial changes bore to endocardial changes the ratio of four to one.

Septic Processes of a Degree Less Than Septicæmia. These consisted of new outcroppings of infection, such as abscesses, or of infections of aseptic wounds in the course of the disease, and were thirty-five in number: they are to be considered as accidental and unimportant. An aseptic wound is almost certain to be infected in the course of the disease.

Nephritis, Albuminuria, etc. The routine procedure upon which the following figures are based is to examine the urine daily during the disease, and twice a week during convalescence. Where

renal disease exists, the examinations are made much more frequently. The cases of scarlet fever which died are not included here.

Fifty-five per cent. of the cases showed nothing abnormal at any time; the forty-five per cent. which showed a departure from normal will be classified. Dealing with 784 cases, a "febrile albuminuria," that is, transient and occurring during the course of the fever, was found 126 times, or sixteen per cent. This is much lower than the figure usually stated for its occurrence. In twenty other cases a trifling change, such as the microscopic finding of blood, without other serious change, permits this to be put aside. No case showing casts is here included. After the fever had subsided, seventy-two cases showed albuminuria without casts, at most on a few occasions and always in minute quantity: forty-three others showed it in greater quantity, yet always in quantity that could be called "moderate," always without casts. Thus 261 cases may safely be put aside as not being cases of nephritis, leaving ninety-four in which albuminuria and casts were present, which merit more careful examination. Eight times a brief albuminuria with casts was found during the febrile period, but for so short a time that it could not properly be called nephritis in the accepted sense of the term.

It is especially necessary not to minimize the frequency of occurrence of disturbance of the kidney, the more so because the first part of this series led me to think that our figures were exceptionally low.

The following estimations have been made in the most conservative manner, and represent the incidence of nephritis in its worst possible light:

Nephritis, with physical signs, or with very definite urinary signs	46
(Of which there had suffered from previous nephritis)	5
Nephritis, moderate	19
Nephritis, slight, in every case doubtful	21

The last class would probably be discarded by a medical jury, and the second would doubtless divide opinions. Still, to avoid partizanship, we count that there were sixty-five cases of nephritis, or, excluding the five who had suffered previously, sixty cases of nephritis due to scarlet fever, that is, 12·5 per cent.

The basis of the above classification is as follows:

CLASS I

Cases with physical signs, albuminuria, and casts	18
Cases with albuminuria, casts, and blood	5

XUM

Cases with albumen in large quantity and casts..... 12
Cases with albumen in large quantity, no casts..... 11—46

CLASS II

Cases with albumen at intervals, and casts..... 2
Cases with albumen in small quantity for a long time with casts..... 17—19

CLASS III

Cases with albumen in small quantity for a short time with casts, or at intervals during a long time with casts..... 21—21

Most of the cases got well before their discharge from the hospital. There were no deaths from nephritis, save one case, which was admitted on the twenty-third day of the disease with convulsions. There have been no other nephritic convulsions in the hospital since its foundation. On a few occasions, puffiness of the face has been noticed without any urinary change, and it has been a matter of comment how often a sudden rise of temperature has been found to be due to the appearance of albuminuria.

The time of onset of nephritis has been determined in fifty-seven cases, as follows:

In the first week..... 28
In the second week..... 6
In the third week..... 16
In the fourth week..... 4
In the fifth week..... 3

THE NERVOUS SYSTEM. In cases that are not fatal the nervous system presents little disturbance. The nursing charts in this series indicate delirium to have been present in one case in twenty-five; slight degrees of mental confusion or wandering of the mind at night are not here included. Headache disappears after the first day or two. Convulsions occur only in the severest cases or from grave complications. The symptoms which simulate those of meningitis are referred to when dealing with fatal cases.

TREATMENT

Treatment is here dealt with because in this series the cases have been treated in an absolutely uniform, and withal, a slightly unusual, way. The basis of treatment is that no case, however slight, is allowed

out of bed until the twenty-first day of disease, and during this time the patient is restricted to milk diet. No exceptions are made, and, as a rule, none are requested. To adult patients, the reasons are briefly explained. In a light case, the chief danger is a subsequent nephritis. The least possible work for the kidneys is desirable, and activity and food are reduced to the minimum, so that the substances ordinarily given to the kidneys to eliminate may be in as small quantity as possible. Time is no object, and although the patient becomes tired of bed, yet the possible attainment of a definite object or the avoidance of a definite risk, is his compensation. Milk diet, too, means milk diet, and includes only buttermilk, whey, cream, if procurable, ice-cream, and later junket. Sugars and some fruits and fruit-juices are allowed. The patients frequently become hungry, but their nutrition, at the time they leave the hospital, bears eloquent evidence to the fact that they have not ultimately suffered from their somewhat Spartan treatment. In the first three hundred cases of this series, it was my impression that we thus obtained a great immunity from albuminuria and nephritis, and while time has somewhat corrected what was probably a partly erroneous idea, yet, when it is considered that I have rather magnified than minimized the frequency of nephritis, 12·5 per cent. is not a discouraging figure. With laxer modes of treatment, it would certainly have been more.

Next in importance to these basal ideas come the local means of keeping clean the mouth, throat, and nose, with a view to the prevention of otitis media, as well as to the proper cleansing of a temporarily diseased area. Irrigation and spraying in patients old enough, and swabbing in others, with the free ingestion of water, are the means used.

Cool or cold sponges and packs are freely used to reduce fever and to promote the comfort of the patients. Ice-collars are frequently used externally upon the throat, and my own efforts are constantly put forth to increase the amount of water drunk, on the principle that both nurses and patients are apt to allow this to be overlooked. If there is any oliguria under these circumstances the case is re-considered upon its merits, for it is only the incompetent kidney that can be damaged by water, and such an incompetent kidney indicates its condition by refusing to excrete even water in the proper amount.

Wherever a secondary infection makes itself known in a position where it can be reached, cultures are taken, and, if possible, vaccine is made and used. In all serious cases of secondary infection, anti-streptococcic serum is used. At first we were accustomed to give ten c.c. every other day, but during the last two years we have increased

the dosage and give ten c.c. every day, or even larger doses. There have not been any striking results yet obtained, and our experience has not led us to a definite conclusion upon its utility. Wherever the need for antidiphtheric serum arises, we use it freely; seventy cases in this series of cured cases received three hundred c.c. of antistreptococcic serum and half a million units of antidiphtheric serum.

THE American Proctologic Society announces that the cash sum of $100 will be awarded in 1911 to the author of the best original essay on any disease of the colon. Essays must be submitted to the secretary of the committee on or before May 10th, 1911. The address of the secretary is given below, to whom all communications should be addressed. Each essay must be typewritten, designated by a motto or device, and without signature or any other indication of its authorship, and be accompanied by a separate sealed envelope, having on its outside only the motto or device contained on the essay, and within, the name, the motto or device used on the essay, and the address of the author. No envelope will be opened except that which accompanies the successful essay. The committee will return the unsuccessful essays, if reclaimed by their writers within six months, provided return postage accompanies the application. The competition is open to graduates of medicine (not fellows of the Society), and to members of the senior classes of all colleges in the United States or Canada. The committee shall have full control of awarding the prize and the publication of the prize essay, and it shall be the property of the American Proctologic Society. Dr. Lewis H. Adler, Jr., secretary, 1610 Arch Street, Philadelphia, Pa.

SOME CONSIDERATIONS IN DUODENAL ULCER

By W. H. Rankin, M.D.

THE visible pathology of the stomach, as demonstrated by the surgeon and the experimental work of physiologists, has emphasized the interrelation of the different organs of digestion in preparing food for assimilation, and we now understand better the protective influence of these digestive juices in destroying the harmful germ life consumed with the different articles of our diet. Few, indeed, are the bacteria or parasites that can survive after having been submitted to the destructive effect of the different alkaline and acid secretions of the digestive tract, and it has been shown repeatedly that the duodenum is comparatively sterile a few hours after a meal.

The duodenum at an early period of fœtal life has a mesentery of its own, slight in extent, lying between it and the posterior abdominal wall. In the development of the fœtus the small intestine grows more rapidly than the large, and forces the cæcum upward into the left hypochondriac region. The intestines then rotate from left to right around the superior mesenteric artery as an axis. The cæcum crosses the abdomen to the right hypochondrium and then descends into the right iliac region, while the small intestine rotates to the left. The colon is thus carried across and in front of the first part of the small intestine, and the superior mesenteric artery falls across the small intestine at the termination of the duodenum. The duodenum is thus sequestered behind the colon and stomach, and, being subject to no movement of any consequence, loses its posterior mesentery by absorption and becomes, in extra-uterine life, a retroperitoneal organ. Carried by the colon transversely across the end of the duodenum, the transverse mesocolon obtains secondary attachments to the latter and to the posterior abdominal wall in a line from left to right, and remains permanently as a well-marked mesentery. Thus the transverse colon with its mesocolon divides the abdominal cavity into an upper part, which includes the stomach, liver, duodenum, and pancreas, and a lower, which contains small intestine.

It is of the utmost importance to bear in mind the embryology of the gastro-intestinal tract, for only by so doing can we get a clear conception of the many medical and surgical conditions within the

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Address to the Faculty of Queen's University, January 12th, 1911.

XUM

abdomen with which we have to deal. The absence of the duodenal mesentery and the bound down condition in which we frequently find this part of the intestine, preventing it from accommodating itself to the varying conditions of tension and pressure, and consequently depriving it of its normal blood supply, may well be one of the predisposing causes of ulcer in this region. The constant bombarding of the first part of the duodenum with jets of acid gastric juice from the stomach, and the abundance of toxins poured into the duodenum from the liver, no doubt render it liable to local disease. When standing erect the superior mesenteric artery brings pressure against the duodenum and must frequently retain the strong, pancreatic secretion in contact with the duodenal mucosa for an abnormal length of time, producing irritation and painful sensations.

The ætiology is not, as yet, clearly understood. There are many theories put forth by many men, each one citing cases that would seem to support his thesis, but nothing has been offered that is accepted as a wholly satisfactory explanation of the disease. Hort, in a series of papers, maintained that gastric ulcer is not a disease *sui generis* but merely a local expression of a general dyscrasia caused by the presence in the blood of cytolytics of the gastric epithelium; in other words, he attempts, by his treatment with blood serum, to reëstablish a condition of immunity of the gastric mucosa to the action of gastrolytic toxins and enzymes, which first cause, and then render permanent, the ulcer. There seems to be increasing evidence that the toxins are conveyed in the blood stream and in some way disintegrate the blood. We know that the intima of the blood vessel is nourished by the blood stream, and in many toxic conditions the capillaries allow the blood to escape, carrying their toxins into the tissues. Further, we know from practical experience in cases of acute toxæmia, that if a large quantity of normal salt solution is rapidly introduced into the circulation it will escape through the capillaries into the tissues, whereas if blood serum is introduced into the circulation in toxic conditions, blood no longer escapes from the capillaries. It is probable that minute hæmorrhages into the lymphoid tissues of the mucosa soften it and cause it to break down, forming a small ulcer. Its muscular base contracts to close the rent, but permanent rest is impossible in an organ that must alternately contract and relax during the process of digestion. Consequently, the ulcer extends and goes through the stages of inflammation, interstitial thickening, fibrosis, and contraction, forming the chronic, open ulcer, unless the early stages of its formation have been sufficiently acute to cause rapid perforation.

For the purpose of this paper, I shall confine consideration to the

chronic, open, or unhealed, duodenal ulcer, and the perforating, chronic ulcer; the acute, perforating ulcer is, as a rule, a complication of exceedingly severe toxæmia destined to run a fatal course, and is seldom recognized during life. The acute, perforating ulcers are seen most frequently associated with burns, scalds, uræmia, melæna neonatorum, as well as in acute septic conditions.

CHRONIC, OPEN ULCER OF THE DUODENUM. In examination, the entire abdomen and lower thorax should be bared and in a good light. Note should be made if there is any region of localized bulging, and whether the abdomen is flat or distended. The character of the breathing, whether shallow and rapid and confined to the chest, as is often the case where peritonitis is present, should also be marked. In palpating the abdomen it is well to proceed leisurely and invariably to commence by gliding the warmed hand over some unaffected region, then, noting the rigidity and pain occasioned, the hand is gently and slowly carried over the diseased area. Attentive examination should be made of any tumescence detected, noting its location, its consistence, its density, its fixity, its general conformation, the presence or absence of movement during respiration, its mobility, if any, and in what direction, and, finally, its relation to surrounding structures.

Gastric analysis after a test meal of zwiebach and a cup of tea is very helpful in determining the presence and per cent. of hydrochloric acid in the gastric secretion. It is quite as important to test the gastric motility by evacuating the stomach six hours after the ingestion of an ordinary, full meal. If the motility is normal there should be practically no residue after this lapse of time.

After the patient has been given a copious, mucilaginous drink of sub-carbonate of bismuth and mashed potato, skiagraphy is of the greatest assistance in determining the location, size, and patulous conditions of the pylorus. If stenosis exists, food will be retained an abnormally long time on the proximal side of this point. If, on the other hand, the pylorus is rendered rigid by the disease, but remains patulous, as at times occurs, the food may be seen to pass out of the stomach as fast as it enters at the cardiac orifice.

The three cardinal symptoms in chronic, duodenal ulcer are pain, hyperacidity, and hæmorrhage. The interval of relief from pain after taking food must have some relation to the size and position of the ulcer. When it is small, and its muscular base able to contract and close the rent, converting it into a fissure, comparable to a fissure in ano, the pain is not so severe as it will be later when fibrous thickening around the ulcer prevents the intestinal muscle from contracting. No doubt many small erosions heal before the muscular base gives way,

XUM

but if they fail to do so they soon become converted into the chronic, open ulcer. If, then, an open ulcer is situated near the pyloric ring, pain will be synchronous with opening and closing of the pylorus when food passes from the pyloric end of the stomach. A duodenal ulcer not near the pyloric ring is not so painful as one involving the ring or extending into the pylorus. In the first case the pain does not begin until the period of greatest acidity of the stomach contents, some two and a half or three hours after eating, whereas the ulcer at or near the pyloric ring is more exposed to the acid fluid ejected from the stomach, and pain comes on earlier. The vast majority of duodenal ulcers are situated near the pyloric ring and, as would be expected, the period of beginning and duration of pain is fairly constant in all cases. Pavlov's experiments in the physiology of the digestive glands show conclusively that the kind of food eaten has a very definite relation to the quality of the gastric and pancreatic secretion. The more protein we consume, the more actively the peptic glands secrete pepsin and hydrochloric acids and, conversely, the less protein and more carbohydrates we consume, the less hydrochloric acid and pepsin is secreted. However, a low percentage of hydrochloric acid does not necessarily mean a corresponding decrease in pain, so it is very probable that the closing of the pylorus and the contracting and retracting of the duodenum is the principal factor in exciting the pain. When there is marked hyperacidity of the stomach contents, there is, probably, greater irritation and more active stimulus, and, consequently, more vigorous spasm and greater pain.

A great deal of attention has been given to analysis of the stomach contents, but the findings have not been constant in a number of cases, or even in any one case. Duodenal ulcer is very frequently associated with hyperacidity, but the percentage of hydrochloric acid may be normal or even below normal. A laboratory diagnosis is impossible, but the results from laboratory examinations should be grouped with the other clinical evidence in making up an estimate of the symptoms. In a certain percentage of cases of duodenal ulcer, hæmorrhage is a notable symptom of the disease. The blood may be vomited, or it may be discharged from the bowels. There is no doubt that many small hæmorrhages are overlooked. If the stools were examined for occult blood it would be found far more frequently than is now believed. Patients very rarely die of hæmorrhage, unless the thickened ulcer forms around the artery, preventing it from contracting at the point of rupture.

The story of a chronic, duodenal ulcer, then, is the story of chronic dyspepsia. A man who has enjoyed good health and has had no pain

after taking food, gradually develops discomfort two or three hours after eating a full meal. This may last for a few weeks and, finally, all symptoms disappear. After a period of weeks, or months, the symptoms return with increased severity and last indefinitely. He changes his diet or abstains from eating in the hope of finding relief. If the ulcer has not contracted sufficiently to precipitate a crisis, the patient goes from one physician to another, or from one experiment to another, vainly seeking a permanent cure. Meanwhile, other symptoms develop: the pain becomes more frequent after every meal, and is described as burning or gnawing, the stomach becomes distended with gas, and sour eruptions are carried into the mouth. It is observed that food relieves the pain for a time, and he feels comparatively comfortable until the stomach begins to empty itself through the eroded pylorus. He gradually loses weight, his vigour is impaired, and anæmia slowly develops. One day a feeling of faintness is observed, and if the family physician is summoned he will note that the pulse is soft, the lips a bit pale, and the patient restless and apprehensive. The day following will likely disclose blood in the stools, or possibly the patient may have vomited some blood. The hæmorrhage is seldom so severe as to be alarming. Thereafter, if the stools are carefully watched, occult blood will very frequently be found. After a period of months or years, when the ulcer contracts and becomes well-nigh obstructive, all the symptoms are intensified. The stomach becomes markedly dilated and distended with gas. Succussion is notably present, and vomiting of several ounces of food is now a common symptom, and is often induced by the patient to bring relief. Patients frequently remark that the fluid vomited contains certain articles of diet, such as lettuce and raisins, that they have eaten many hours before. At this stage they have no satisfactory bowel movement, and they seem to be as much worried about this as at their discomforts. Sooner or later they learn to live on broth and rice, which they have noted escapes from the stomach more readily than other foods. Occasionally, an attack of pain is unusually severe and persistent, with tenderness in the epigastric region. After a few days' rest in bed they recover to go on again as before. This has probably marked the pin-point perforation which has been plugged by the abdominal policeman—the omentum.

The foregoing symptomatology is so indicative that there is little room for error. The long course of the disease, with alternate periods of discomfort and normal digestion; the pain coming on from two to four hours after eating, or, as patients say, before eating, and which is frequently described as hunger pain; the relish for food and the relief it affords; the marked loss of weight; the anæmia; the visible or occult

XUM

blood; the large quantity of partly digested food that may be withdrawn five or six hours after eating a full meal; are symptoms so unlike any other condition that a diagnosis of duodenal ulcer is unmistakable. If there is obstruction, a test meal of boiled rice with a few raisins to be withdrawn in two or three hours, will quite surely show that the raisins have remained in the stomach. Occasionally, palpation may reveal the thickened pylorus, and we may now and then observe the pylorus descend towards the umbilicus when the patient takes a deep inspiration. The writer has seen this but once—a case of syphilitic gumma of the pylorus with symptoms of obstruction,—nor should we expect to find it often when we remember the bound down condition of the duodenum. Local tenderness and muscle spasm are seldom a prominent symptom, and palpation seldom reveals anything of note.

The cases for differential diagnosis may be classified in four main groups:

1. Gastric ulcer; gastralgia; atonic dilatation of the stomach; tubercular ulcer of the upper part of the small intestine.
2. Diseases of the gall bladder and bile ducts; chronic pancreatitis.
3. Chronic appendicitis.
4. The crises of locomotor ataxia and hyperthyroidism.

Gastric ulcer is so similar to duodenal ulcer in embryology, pathology, and symtomatology, that they are usually considered together. The great majority of gastric ulcers are situated in the pyloric end of the stomach. Duodenal ulcers are most frequent in males,— seventy-five per cent.—while gastric ulcers are more frequent in females. In gastric ulcer, pain, if present, comes on soon after eating. Food does not increase the feeling of well-being, as in duodenal ulcer. There is a greater tendency to vomit after eating, and there is more frequently blood in the fluid expelled from the stomach.

Gastralgia is more capricious in its attacks. The patient will be free from discomfort for two or three days or weeks, then, after an evening meal, the pain returns with great severity. The discomfort is not increased by food nor relieved by vomiting. Gastralgia is most frequent in nervous men, perplexed with business cares, and in young females. These cases get well by forced feeding and change of environment.

Atonic dilatation of the stomach is a comparatively infrequent condition, and a family history of dyspepsia is obtained in the majority of cases. The symptoms are not intermittent, but constant, and the pain is not often severe. The motor function of the stomach is so impaired that food can be recovered from it six or twelve hours after eating. We usually find this condition in those of feeble physique or advanced in years, with a general enteroptosis. It is now recognized

that many cases thought to be atonic dilatation were really dilatation from pyloric obstruction.

In the pearl-button, tubercular ulcer of the upper part of the small intestine, there is pain in the epigastric region soon after eating, or when the food increases intestinal peristalsis. The patients rapidly lose weight and strength, and there is a slight fluctuation in temperature. The stomach empties itself in the normal time and there is no vomiting. The course of the disease is progressive and fairly rapid. Not infrequently we find evidences of tubercular disease elsewhere in the patient. In the stools we find considerable mucos and, often, occult blood. A tuberculin test for Von Pirquet's cutaneous reaction will assist in clearing up the diagnosis.

Again, there are rare cases of fibromatosis of the pylorus and duodenum, ascribed to tubercular intoxication, causing great thickening of the sub-peritoneal coat. The symptoms are very like those found in ulcer or cancer, and the nature of the pathological lesion can only be definitely determined by the microscope.

Disease of the gall bladder and bile duct is marked by sharp attacks of pain that is frequently intermittent in character, often with local tenderness and peritonitis, followed by long periods of complete relief. In gall stone disease the pain is referred to the subscapular region, or over the point of the shoulder. During the attack, respiration is short, catchy, and accompanied by a groan, as the laryngeal reflexes relax for an instant only during expiration. Occasionally, the attacks are followed by jaundice, and there may be absence of bile in the stools and bile pigment in the urine.

Chronic pancreatitis is associated with disease of the gall bladder and bile ducts, and is seldom accompanied with severe pain. There is, frequently, sugar in the urine, tenderness in the left, rather than in the right, epigastric region, and undigested food in the stools. Cammidge's reaction may be found in the urine.

Chronic appendicitis very frequently occasions severe, reflex spasm of the pylorus and stomach, often being accompanied by vomiting, the fluid regurgitated being stained with bile. Pavlov and Cannon have carried on some interesting experiments on pylorospasm, showing that the pylorus responds to stimulus from the distal, as well as from the proximal, side. Ochsner, in a monograph, has pointed out the increased muscular fibres in the duodenum below the papilla of Vater. This strong, muscular band of the duodenum contracts from reflex stimulus, and causes the bile to be regurgitated into the stomach. This chain of events is graphically described as a message up the line to "ring off" or to stop sending down food into the gut to stimulate

XUM

peristalsis in the diseased intestine. While the attacks in chronic appendicitis may be at frequent intervals, they are usually of short duration. The tenderness is in the right iliac region rather than in the epigastrium. The attacks often have a relation to indiscretions in diet.

The crises of locomotor ataxia are easily distinguished from diseases of the stomach, but they are not infrequently overlooked. The anamnesis and a test of the reflexes clear up the diagnosis. The crisis of hyperthyroidism is distinguished by the tremor, the sweating, the quick pulse, the heart sounds, and the more or less marked enlargement of the thyroid glands.

Inasmuch as careful post-mortem examinations disclose many healed duodenal ulcers, it is clear that much may be hoped for by medical treatment, but it is evident that the condition must be recognized early and the treatment pressed vigorously if a successful result is to be obtained. The indications would be for a diet consisting of food quickly and easily digested, so as to leave the pylorus at rest as long as possible. Acidity should be neutralized by alkalines, and some mild antiseptic administered to prevent undue fermentation. If the stomach does not empty itself after a period of four hours, the stomach tube should be passed after the evening meal and the fluid withdrawn, and then the stomach washed out with a weak solution of bicarbonate of soda. Blood serum should then be administered after a light supper of chipped beef and a slice of toast. To control hæmorrhage, human blood serum should be given subcutaneously or into a vein. For an antiseptic and an anodyne, resorcin serves a useful purpose. A convenient and good alkaline is a powder composed of equal parts of bicarbonate of soda, salicylate of bismuth, and calcined magnesia. However, if the case relapses, we should not be unmindful of the danger of perforation in these ulcers, as ten per cent. of them will, sooner or later. Nor should we overlook the many complications likely to overtake the patient in impaired health. Those suffering from a chronic disease seldom die of it, but rather of some complication or terminal infection. To-day surgery in skilled and experienced hands offers the sufferer from chronic, duodenal ulcer a great measure of relief. If the patient comes to the surgeon before he is well-nigh exhausted from want of food, loss of blood, and long periods of pain, there is every hope of complete relief and cure in over ninety per cent. of the cases. But if, on the other hand, the patient is greatly emaciated and the pylorus bound down by perigastric adhesions, the risk of operating is proportionately greater. While it is true that gastro-enterostomy will prevent the patient from starving to death, it is by

no means a panacea for all the ills of the stomach. The no-loop operation and the technique, as worked out by W. J. Mayo, is the one most frequently employed on this continent, as it drains the stomach well, interferes with its motor functions very little, and delivers the food as near as possible to the duodenum where the pancreatic juice and the bile enter the intestine. Occasionally, the Finney operation is to be preferred, as it comes nearer to the ideal of the *restitutio ad integrum* than any other procedure, and if the patient is in good condition the mortality in skilful hands is not materially greater. Should the pylorus be the site of dense scar tissue that practically obstructs, and the duodenum be bound down by inflammatory adhesions, it would not be good surgery to leave such a condition. The Rodman operation is then the one of choice; i. e., excising the first part of the duodenum and pylorus, closing off the stomach and intestine, and doing a gastro-enterostomy. In cases where the obstruction has gone on for some time, we find the first part of the jejunum collapsed, retracted, and contracted. Such a loop of intestine will not serve very well for an anastomosis with the stomach. It is better, in such a case, to select a loop of normal size for anastomosis and then to do a lateral entero-anastomosis, proximal and distal to this point. In this way the bile is prevented from sagging the proximal loop and so bringing about obstruction. The after treatment of gastro-enterostomy is very simple. The all-important point is to sit the patients up in bed as soon as they have recovered from the anæsthetic. This brings the stomach on a lower plane and in line with the jejunum, and takes the tension off the point of anastomosis, and provides better drainage for the stomach and intestine. The first day following the operation fluids may be given by the mouth, then nourishment in substantial amounts, and, by the end of the first week, in sufficient quantity to satisfy the patient's hunger. The family physician should keep close supervision of the case until restored to normal health.

Perforating, Chronic Ulcer. There are few cases of perforating, chronic ulcer where we can not obtain the history of ulcer symptoms extending over a considerable period of time. It is evident that the early symptoms of this accident will have some relation to the condition of the stomach at the instant of perforation. If this misfortune should happen shortly after partaking of food, the onset of symptoms will be much more prompt and severe than would be the case of a perforation in the early morning, when the stomach is empty and its contents comparatively sterile. In a typical case the patient is seized suddenly with intense pain in the right epigastric or hypochondriac region. This will, probably, be followed by vomiting and intense thirst—

XUM

Nature's method of protecting herself. The pain gradually grows more severe, if possible, and more widespread. The upper abdomen becomes rigid, even board-like, and scaphoid. Respirations are thoracic, short, and catchy. The liver dullness is diminished and the patient passes into a condition of shock. As the fluid from above gradually escapes down along the colon to the lower abdomen and into the pelvis, causing peritonitis there, the pain becomes still more widespread. The lower abdomen then becomes rigid and tender on palpation. During the first twelve or twenty hours the left side of the abdomen is not involved, as the splenic flexure of the colon is on a higher level than the hepatic flexure, causing the mesocolon to drain the escaping fluid to the right side. The stomach contents and peritoneal fluid then drain, not through the foramen of Winslow, but over the hepatic flexure of the colon into Morrison's kidney pouch, down along the ascending colon into the right iliac fossa, and then down into the pelvis. Above the hepatic flexure of the colon, the fluid finds its way under the liver to the diaphragm. When the abdomen becomes distended from peritonitis, the infection may be forced along the transverse colon into the space bounded by the cardiac end of the stomach, the spleen, and the diaphragm, a location likely to become the site of a subphrenic abscess. The early symptoms, then, are in the right epigastric and hypochondriac region. The local pain is intense, the respirations thoracic, and there is vomiting and thirst. Later, perhaps after twelve hours, the pain is more general and the tenderness mostly on the right side, and, most significant of all, the pelvic peritonitis is very marked. Indeed, I know of nothing that will cause such rapid, and intensely severe, pelvic peritonitis as the perforation of a duodenal ulcer. By vaginal or rectal examination we find the tenderness most exquisite in every direction. I would lay the strongest possible emphasis on this point. However, we must be on guard for those mild cases where the perforation has taken place when the stomach is empty. Here the peritonitis is less severe and likely to remain local for some time, the adhesions formed walling off the peritoneum and forming an abscess around the rent in the duodenum.

The conditions for differential diagnosis are:

1. Gall stone colic.
2. Acute hæmorrhagic pancreatitis.
3. Acute appendicitis.
4. Very acute hæmatogenous infection of the kidneys.
5. Rupture of an extra-uterine pregnancy.
6. Crises of locomotor ataxia.
7. Spontaneous rupture of the œsophagus above the diaphragm.

In gall stone colic we have pain coming in paroxysms, catchy respirations, want of muscle spasm of the same degree of intensity as we find when peritonitis is present. There is no scaphoid abdomen, and the liver dullness is not diminished.

Acute hæmorrhagic pancreatitis is a comparatively rare disease, and occurs most frequently in stout women and in the alcoholic male,—saloon keepers, etc. The pain is quite as intense and radiates to the back, or, as one patient expressed it, she "felt as if being torn apart," an important point to bear in mind. But there is not the tenderness over the upper abdomen in acute pancreatitis that we find when peritonitis is present. An analysis of the urine will show oxalate of lime and Cammidge's pentosazone crystals. There is frequently a very severe degree of shock. In either case operation should be performed at once. When the abdomen is opened the diagnosis is instantly cleared up by finding spots of fat necrosis in the mesentery and omentum, and some bloody fluid in the upper abdomen. Fat necrosis was first described by Balser in 1882, and later it was proved by Longerhans that the areas of necrosis were produced by the splitting of fat into fatty acids and glycerine; the latter is absorbed, and the former combined with calcium to form soap. Cammidge, in investigating the matter, further found that the urine in suspected pancreatic disease gives evidence on analysis of the presence of a sugar complex, probably a nucleoglycoprotein, which, on hydrolysis with hydrochloric acid, gives rise to a substance having the nature of a pentose, and the typical crystals obtained in the reaction are pentosazone crystals. Acute pancreatitis sometimes runs a somewhat milder course, but remains local, whereas the peritonitis of duodenal ulcer rapidly extends to the lower abdomen.

A perforating, duodenal ulcer is far more frequently mistaken for appendicitis than for any other condition, or all others combined. If the patient is seen in the first few hours, error should be impossible. In any case, a full history and a careful physical examination should eliminate any possibility of confusing the two conditions. In appendicitis the pain may be in the umbilical region in the beginning, but muscle spasm is in the region of McBurney's point. The upper abdomen is not very rigid, and the respirations are not almost wholly thoracic. Most important of all, we do not find the same exquisite tenderness in the pelvis by vaginal or rectal examination, unless, as very rarely occurs, the appendix ruptures at its base during the first few hours of the attack, and so allows the fæcal matter to escape into the pelvis. Another infrequent form of appendicitis is where the appendix is post-cæcal and subperitoneal for its whole length, excepting at the tip,

XUM

which is free and behind the ascending colon. In such a case, when the end of the appendix becomes gangrenous, and the site of an abscess, the early symptoms are masked. The pain is then in the back and the tenderness in the lumbar region. Should the infection extend it is likely to do so in an upward direction along the ascending colon, and thus reach the lesser peritoneal cavity. Here we have the story of pain extending to the epigastrium and not originating in the locality of the duodenum. In appendicitis we have the area of hyperasthesia of the skin over the appendix.

Very acute hæmatogenous infection of the kidney is ushered in with a chill and a temperature of 102-104°. The right, upper quadrant of the abdomen is the site of pain more or less intense, and of considerable, muscle spasm. The urine is scant, sometimes containing blood and numerous bacteria. The colon bacillus is present in seventy per cent. of the cases. The leucocyte count is high,—from 25,000 to 50,000. While acute, hæmatogenous infection of the kidney is usually bilateral, it is the right side that is most frequently the more seriously diseased. The classical symptom is pain in the costo-vertebral angle, and exquisite tenderness is observed when the kidney is compressed between the hands.

Rupture of an extra-uterine pregnancy may be attended with great pain and some shock, but the pain is low down, and there is no tenderness and muscle spasm in the upper abdomen. In an examination by the vagina the tenderness is not so exquisite as in duodenal perforation and is more unilateral. We have the history of a delayed or missed period and a mass on one side. Locomotor ataxia needs but to be remembered to be excluded.

There are several thoracic conditions, such as pneumonia and pleurisy, and pleurisy involving the splanchnic nerves, where we have abdominal symptoms characterized by severe pain, but it is only in spontaneous rupture of the œsophagus just above the diaphragm that we get sudden and very severe epigastric pain accompanied with pronounced shock. In a rupture of the œsophagus we have the clinical picture of a ruptured, abdominal viscus high up. After a few hours the condition becomes markedly thoracic. The fluid and gas from the stomach escape into the pleura, compressing the lung, and the clinical signs of a hydropneumothorax are very distinct. The gas passes up through the mediastinum into the neck, and marked subcutaneous emphysema appears over the face, neck, and upper thorax. The respiration rapidly becomes laboured and quick, the skin is blue, and the expression anxious. The physical signs are dullness in the base of the lung, with hyper-resonance above the compression

of the opposite lung. It will be noted, however, that there is no great tenderness or muscle spasm in the upper abdomen.

In treating these cases, morphine should never be given until a diagnosis has been made, for shortly after the administration of this drug, both patient and physician are ushered into a most beautiful fools' paradise. The symptoms subside, and, meanwhile, the fluid escaping through the opening in the duodenum is pouring down into the lower abdomen and pelvis. When the physician has satisfied himself as to the nature of the disease, morphine may then be given, and the patient hurried to the operating table as quickly as possible, for there is but one hope, and that is in surgery. The abdomen should be opened by a free incision, the intestines packed off, the pylorus located, and the opening of the duodenum brought into the field of vision. The crater of the ulcer may or may not be excised, as seems best to the operator. The opening is then closed, first with a row of catgut, and then with a row of silk sutures placed transversely to the lower axis of the bowel. If the ulcer is large and the patient in fair condition, it is well to do a gastro-enterostomy at the same time. This has the advantage of not only preventing the return of stomach symptoms, but enables the patient to take nourishment, after the peritonitis subsides, much sooner and more freely than would be possible after a simple closure of the rent in the duodenum. The peritoneal toilet is completed by carefully sponging out all fluid and foreign substances that have escaped from the stomach, or the upper and lower abdomen may be irrigated with warm normal saline solution and syphoned with tubes after the method of Blake. A stab wound is made in the suprapubic region and a tube inserted into the pelvis for drainage below. The upper and lower wounds are connected by a split drainage tube threaded with gauze, inserted along the ascending colon. The tube may be divided in the middle and united with a couple of fine catgut sutures that will soon absorb and allow the tube to be withdrawn more conveniently in both directions.

The after-treatment is the treatment of peritonitis in such cases. Elevate the head of the bed, or sit the patient up in the Fowler position, give no food by the mouth until the peritonitis subsides, the ice coil on the abdomen, if necessary, and no morphine after the patient leaves the operating table. The percentage of recoveries diminishes rapidly as the time of operating is delayed after perforation has taken place. Few cases recover if surgical assistance is withheld for forty-eight hours. The statistics as given by Mayo Robson in 155 cases are as follows:

XUM

Time	*Cases*	*Died*	*Recovered*	*Mortality*
Under 24 hours	61	23	38	38 per cent.
Over 24 hours	63	52	11	82 per cent.
Later.....	31	28	3	90 per cent.

It will be seen that the all-important point is an early diagnosis and an earnest warning to the unfortunate patient that without surgical assistance there is no hope of recovery.

"THE report of the milk committee of the Illinois legislature, which was adverse to the tuberculin test, on the ground that a positive reaction is not a reliable indication of tuberculosis in cattle, received a severe check in a test recently made in Chicago. The action of the committee was followed by the introduction into the legislature of a bill (House Bill 55), which seeks to prohibit the enforcement of the tuberculin test by municipalities. This was introduced in the interest of those milk producers of the state who assert that the test is not conclusive. This assertion has been disputed vigorously by the Chicago health authorities, who have been enforcing this test in the dairies which supply milk to the city of Chicago. The milk producers, confident of their ability to show the fallacy of the tuberculin test, sent to the Chicago stockyards fourteen cattle that had been found tuberculous by the tuberculin reaction. The cattle were killed, and, after examination by the state and federal inspectors all were condemned as being seriously infected with tuberculosis. Two cows which had not reacted were found free from tuberculosis."—*The Journal of the American Medical Association.*

HUMAN CARRIERS OF DISEASE

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WITH the firm establishment within the past quarter of a century of the microbic causation of most of our diseases, the identification and life history of the causal organisms have called for much study, and this study has had to consider the life history of the parasite both within and without the human body. The sick, i.e., the infected, individual, presenting distinct signs of illness, has in the past been looked upon as the all-important source and distributor of infection. He must still be recognized as of first importance in this respect, and in all transmissible diseases every reasonable precaution must be taken to check the patient from being a focus of distribution. Recent knowledge has not lightened our duties in this respect, and the study of the life history of certain microörganisms within and without the body has made plain the parts which may be played by other distributing agents, e.g., by insect carriers, and by infection originating from those individuals, apparently well, whom we now term "carriers."

In certain infections it has long been recognized that the body tissues may, at least temporarily, gain the upper hand, check the propagation of the infecting microbe, and cause health to be restored. The microbes, however, are not always entirely destroyed, but some may lie latent and, later on, again find favourable conditions for propagation and a rekindling of infection. A person who has had one of the varieties of malarial fever and recovered from the attack, may years later, without fresh infection, and, indeed, very often when far removed from a malarial district, again develop an attack of malaria. The parasite has in its resting form lain latent in the body tissues, likely in the bone marrow, and has, through some as yet unknown stimulus, been stirred again into activity to resume its developmental cycle in the blood corpuscles.

Again, we are all aware of the frequency with which latent (non-active) tubercular lesions are met with in the bodies of those dying from other causes. Clinically, too, we frequently meet with tubercular infections which, so far as can be judged, we must assume to be due to the recrudescence of activity of the bacilli in some latent focus.

Read before the Ottawa Medico-Chirurgical Society.

XUM

In syphilis our patients, after freedom from evidences of the disease for years, may return showing some late tertiary lesion or, perhaps, the lesions of tabes or paresis, affections which, in the light of our present knowledge, largely gained through the application of the Wassermann reaction, must be considered distinctly syphilitic. We are as yet quite unaware where the spirochætes have lain latent, or what factors stir them into activity. Nor is latency of this type confined to specific infections. It is met with in non-specific lesions as well, e.g., recurring appendicitis.

In latent infections of the character of those just mentioned, the danger is entirely to the individual carrier; he cannot in any way be considered as dangerous to others during the period of latency. In certain other diseases, after the tissues have gained the upper hand and health has been restored, the causal microörganisms may still remain within the body, and may even multiply largely. Such lodgement may be but temporary, or may continue for long periods, the microbes being excreted either continuously or intermittently, and the subject thus becoming a possible distributor of infection. It is not necessary that the individual should suffer an actual infection of his tissues for him to become a carrier of the microbe, as this may acquire a habitat and yet the tissues be able to withstand actual infection. It is particularly in connexion with these apparently healthy individuals, who, after contact or convalescence, continue to harbour and excrete the causal microbes, that we apply the term "carriers." Let me here point out what we all know, but at times lose sight of; namely, that we all constantly harbour on our skins and certain of our mucous membranes some pathogenic varieties of bacteria which, so long as our resisting powers are good, are to us harmless, but which too often take advantage of general or local lessening of resistance and attack our tissues. We call these forms "commensal" bacteria, and we find that certain of them, besides being an ever present danger to the individual, are capable of transmission to others. All individuals harbour on their skins the staphylococcus pyogenes albus, the majority show on their hands the staphylococcus aureus as well, and a few, the streptococcus pyogenes. These three, and especially the latter two, are preëminently the bacteria of wound infection. The commensal bacteria on other surfaces are but seldom transferable to others and need not be here referred to. In view of the fact that these species have thus habituated themselves to an existence in or on our bodies, we need not be surprised if some individuals afford a suitable nidus for other species of bacteria, which thus become commensal. The germs which can be acquired and are capable of being transmitted

by such carriers, are the diphtheria bacillus, the typhoid bacillus, the dysentery bacillus, the ambœa dysenteriæ (entamœba histolytica), the cholera spirillum, the meningococcus, and, in all probability, the virus of anterior poliomyelitis. As time will not permit of any detailed discussion of the carrier problem in each of these diseases, I shall pass over some of them lightly, laying more particular stress on the diphtheria and typhoid carriers.

In diphtheria we have now faced the carrier problem for a number of years, i.e., we have recognized that certain patients continue to harbour the diphtheria bacillus after the disappearance of all local signs of the disease. We have also recognized for quite as long a time the contact carrier. The leaflet on diphtheria, issued by the Ontario Provincial Board of Health, puts the matter very clearly: "As virulent diphtheria bacilli can cause but little disturbance in a person not susceptible, so, too, they can live and grow for a varying period in the throats of persons apparently well. These bacilli very frequently live and grow in the throat and nose of those who have recovered from diphtheria even after weeks, although they appear to be quite well and strong. The average length of time for these bacilli to be found in the throat or nose of recovered cases is about four weeks, and as a number of recovered persons harbour them for longer periods, it is never safe to remove the quarantine from the patient until two bacteriological examinations made of swabs from nose and throat have shown the disappearance of the diphtheria bacilli." The recent quarantine regulations of the Provincial Board cut down the period of detention from a four to a three weeks' minimum but urge that detention should depend on bacteriological examinations. Arkwright[1], in a recently published paper, summarizes the figures of many investigators, and concludes as follows: "Taking the figures as a whole, it appears that one-half of diphtheria patients are free from diphtheria bacilli within two or three days of the disappearance of the membrane, and, of the remainder, probably fifty per cent. are free in another week or ten days. At the end of a month sixteen to nineteen per cent. retain the bacillus, after two months, five to seven per cent., and after three months, one to two per cent.; after six months, ·02 per cent (2 per 10,000). The persistence of the bacillus in contacts is much the same as in convalescents."

My own examinations of diphtheria convalescents and contacts at the Kingston General Hospital isolation department, covering some six hundred cases, would lead me to think that these figures of persistence are too high, as not five per cent. of our patients have to be detained longer than four weeks, and less than one per cent. over

six weeks. Further, when bacilli persist there has nearly always been some such condition as enlarged tonsils or adenoids. The nurses and attendants in diphtheria wards, when freed from attendance on cases, have rarely harboured bacilli beyond the fourth or fifth day, and, with one exception, the only cases that have shown persistence have had local, throat troubles. So far as I have been able to judge, I should consider diphtheria carriers but seldom important agents in the dissemination of this disease. The great factor in dissemination I take to be the presence of mild cases of infection, so mild as to be passed over as simple sore throat, often not seen by a physician, or even if seen, presenting all the clinical features of a benign infection. I look upon the diphtheria carrier as being mainly of import in carrying over the infection and initiating outbreaks. The reason such carriers do not more frequently cause infection would seem to be as follows: 1. The comparatively few bacteria present; 2. the lessening of their virulence; 3. the absence of coughing, sneezing, and "spluttering," constantly noted in those with sore throats, so that the bacteria have not the same chance to become disseminated.

Of course every physician long in practice will be able to recall instances where, after the return of diphtheria convalescents, other cases have developed. Recently an instance of this character came under my notice, where a patient had been in hospital for three weeks and had left without the usual release swab having been taken. Inside of twelve days three other members of the family were down with the disease. As an illustration of the possibility of contacts carrying infection, some six years ago a nurse who had been in the diphtheria wing was, three days after coming off duty there, and without the usual precautionary swabbing, ordered to another of the hospital buildings. The result was six cases of diphtheria and one death. Thereafter strict adherence was required to the regulations demanding negative bacteriological findings from the throats of all contacts, and, in addition, an interval of at least four days between such findings and being detailed to any surgical or children's ward.

Let us next consider the problem of the typhoid carrier, which has in the past three or four years assumed such importance. Cummins[2], in a paper read at the meeting of the British Medical Association in July, 1910, classified persons who pass typhoid bacilli in their excreta as follows: "1. Precocious carriers.—Persons in the incubation period who are harbouring germs but have not yet developed the disease. 2. Paradoxical carriers.—Persons who have contracted the typhoid bacilli without resultant illness and who continue to pass them in their excreta. 3. Typhoid cases.—(a) recognized; (b) unrecognized; (c)

convalescent. 4. Chronic carriers.—Persons who, subsequent to a recognized or unrecognized attack, or even after contact with cases, continue to pass typhoid bacilli either constantly or intermittently in their excreta." This classification is fully justified by the knowledge gained as a result of the extensive typhoid campaign instituted in Germany six years ago, and the similar campaigns more recently organized in other countries, especially in the French and British military services. These investigations have proved that, even in the incubation period, a person may excrete typhoid bacilli in his fæces; that many cases of typhoid infection go unrecognized because patients do not present the usual clinical features described as characterizing typhoid; that cases in children are common, but, being mild, are often overlooked; that convalescents frequently leave the hospital or sick room still excreting typhoid bacilli; that of these convalescents a certain percentage continue to excrete typhoid bacilli in fæces or urine, either continuously or intermittently, for months or years; and, finally, that of those exposed to infection, who do not take the disease, a small percentage also become chronic carriers.

As to the percentage of convalescents leaving hospital or sick room still excreting typhoid bacilli, different figures are furnished. The average of the German figures is eleven per cent. Park, of New York, says eight per cent. In some fifty examinations made on urine and fæces of typhoid convalescents leaving hospital this past two years, I have demonstrated typhoid bacilli six times, an average of twelve per cent. The percentage of cases, convalescents and contacts, that become chronic carriers is considerably smaller, the figures of different investigators running from 1·5 to 6 per cent., the general average lying between three and four per cent.[17] Further, it is a matter of general agreement among those who have made the attempt, that it is very difficult, in most cases impossible, to get rid of these bacteria, so that we can say with Ledingham[3] "once a carrier, always a carrier."

In their care of typhoid cases, all physicians, of course, take measures ensuring disinfection of excreta, bed and body linen, and hands of attendants. When this is properly done the patient may be eliminated as a cause of typhoid dissemination. Despite this, typhoid fever continues widespread in our cities, towns, and rural districts. To a certain extent, such dissemination is due to absence of precautions in cases really typhoid but not recognized as such because of other symptoms present. In times of typhoid epidemic many cases are noted not at all conforming to classical typhoid, but proving to be such when investigated bacteriologically. In an outbreak recorded by Vincent[4] as occurring in a French regiment, only nineteen

XUM

men were sent into hospital with clinical typhoid, but thirty-eight others with varying symptoms of illness were proved by blood reactions, blood cultures, and examinations of stools, to be really infected. Thus two-thirds of the total number actually infected would no doubt have been temporary carriers and possible distributors had they been allowed to go at large without any precautions. Dr. Frosch,[5] director of the typhoid campaign in Germany, records an investigation made into conditions in a locality where seven cases of typhoid fever had been reported. This investigation revealed seventy-three persons actually infected, fifty-two of whom were children. The small ratio of reported cases was not the local physicians' fault, as most of those found infected had not called in a physician, or had only required his attendance a few times.

At the beginning of 1910, and again, recently, there have been two small outbreaks of typhoid fever in Kingston, both due to an infected water supply from a break in the suction pipe in its passage through an area grossly polluted with sewage. I reported many more positive Widal reactions than the physicians reported cases of typhoid fever to the Medical Health Officer. I have had to answer many inquiries as to why a positive reaction should be given in febrile cases lasting five to fourteen days, in some cases showing tonsillitis with fever persisting for from ten to twelve days, cases with bronchial symptoms, etc. I am certain that some of our physicians now view the Widal reaction, as a sign of typhoid, with marked suspicion. Nevertheless, I feel justified in assuming that these cases were really cases of typhoid with anomalous symptoms and course.

When it is considered that at least three per cent. of these mild, anomalous cases become permanent carriers, we may apprehend how it is that typhoid has retained its footing despite our care of the sick, our improvement of water supplies, and installation of sewage systems. It is due to the constant presence in communities of carriers that an outbreak of typhoid must be considered imminent if public water supplies are found to contain bacteria of fæcal origin in appreciable numbers. The water must be condemned for drinking or domestic use unless boiled, filtered, or chemically treated. Similarly, if wells are found infected with fæcal bacteria, and there is any possibility of this infection being of human origin, the well is always condemned. Owing to the limited drainage of wells, and the comparative few who make use of water from any single well, the disease-propagating powers of even specifically infected wells are usually limited.

Carriers when unrecognized, and they are still largely unrecognized in this country, and even if recognized cannot legally be put under

any form of sanitary restraint, are in reality more dangerous than the sick, for, being unaware of their condition, they take no special care of their excreta, hands, or linen, and if in a position where they may be handling food, especially milk, may become very dangerous. The number of carriers passing bacilli in their fæces outnumber the urinary carriers at least two to one. Children are rarely carriers, but in adults female fæcal carriers outnumber the males three to one. In fæcal carriers the bacilli develop almost entirely in the bile ducts and gall bladder, not in the intestine itself. While their presence in the bile passages may be unaccompanied by the slightest clinical symptoms, the frequency with which typhoid bacilli are associated in causal relationship to gall stones must be kept in mind. Ledingham[7] points out that the proportion of female to male carriers is the same as female and male cases of gall stones. Urinary carriers are more frequently male than female, the German figures being as three to two. In following through a series of urines from hospital typhoid cases, I can state that it is exceptional not to be able to demonstrate the bacillus in the urine at some period during the febrile stage, while three out of the forty-eight cases examined left the hospital still harbouring the bacillus.

Already there are on record a large number of outbreaks traceable to carriers. I shall quote several as illustrations. One of the first carefully investigated and authenticated cases was that published by Kayser,[8] in 1906, of a female baker of Strasburg, a fæcal carrier, who was accountable for a number of cases, with two deaths. Another case which has received notoriety is that recorded by Soper,[9] in 1907, of a cook, also a fæcal carrier, who in the course of five years had infected twenty-six individuals in various families in which she had been employed. I might add that this woman was kept under quarantine in New York till some months ago, and all kinds of treatment tried, without success, to free her from the bacilli. Park,[10] of New York, in 1909, recorded two milk outbreaks due to milk in dairies. As summarized by him: "Last year we traced over four hundred cases of typhoid to infection of a milk supply by a typhoid carrier who had the disease forty-seven years ago. Just recently we traced fifty cases to a dairyman who had the disease seven years ago." McWeeney,[11] bacteriologist to the local government board of Ireland, in his last report, 1908-9, gives details of two outbreaks due to milk infection by carriers, the first being due to a girl carrier employed in the dairy, the milk of which was sent to a girls' school, where thirty-five pupils were suddenly taken down; the second being an outbreak of similar causation, but with over two hundred cases resulting. Personally,

XUM

I have only had the opportunity of noting two very limited carrier infections. A woman had typhoid in June, 1909, and in May, 1910, went to live as housekeeper with a family in another village. Three weeks later the man and his wife were taken ill with typhoid. No other cases had been in the village for some weeks, they had not been absent from home, and their water and milk supply were common to themselves and some neighbours who escaped infection. The blood of the housekeeper showed a Widal reaction in $\frac{1}{50}$ dilation, but finding she was under suspicion of having transmitted the disease to her master and mistress, she refused to have specimens of her urine and fæces bacteriologically examined, so that positive proof of her being a carrier was not obtained. Just recently another example has come to my notice. Early in October, 1910, a man and his wife left hospital convalescent from typhoid; the man went out a urinary typhoid carrier, the woman, apparently free, but an invalid from chronic, pulmonary tuberculosis. The woman's sister and her husband looked after the convalescents, and about three weeks afterwards both were taken with typhoid, two children in the house also being taken down with the disease within the week following. Two of the four cases ended fatally during the third week of November. The hygienic and social habits of these people were such as would facilitate the passage of infected material to milk, or other foods, and I have no doubt that this was the mode of infection.

It would thus appear that the carrier is an exceedingly important agent in keeping alive this disease in the community, and in initiating outbreaks. If, then, we desire to stamp out typhoid, we must not only continue our present measures of looking to the purity of water and milk supplies, the installation of sewage systems and sewage disposal plants, the removal of garbage heaps and of open privies, the destruction of the house fly, and the thorough disinfection of the excreta, etc., of the sick, but we must in addition give more attention to the personal factor, especially the convalescent and the carrier. While awaiting the day when it will be necessary for a bacteriological analysis to be made of the excreta of all convalescents and suspects, it is essential to impress on all convalescents the necessity there is to carefully dispose of their excreta, and to pay strict attention to the cleanliness of their hands after urination and defæcation.

Cholera and dysentery, amœbic and bacillary, do not present to us many features of interest, though there is always the possibility of the carriage of the former to our shores and of its gaining at least a temporary footing. In these diseases it has been definitely proved that both contacts and convalescents may become carriers, though the

period of carriage is usually limited, as these organisms thrive only in the intestine and seem to find much difficulty in maintaining their existence if the intestinal mucose is sound. The spread of cholera from place to place depends almost entirely on the movements of persons infected but not yet ill (precocious carriers), or of convalescent and contact carriers. The former may bridge over intervals of less than a week, while the convalescent and contact carrier may carry infection for several weeks. Gottschlich,[12] working in the Egyptian quarantine station at El Tor on the route of the returning Moslem pilgrims from Mecca, records six cases of contact carriers three weeks after exposure, and one convalescent carrier harbouring the spirilla for fifty days. In the suspects quarantined in New York at the end of September and the early part of October, 1910, two were cholera carriers. Both were cases that had passed through Naples and were probably there exposed some two weeks previous to arrival. One of these cases was given a dose of sodium sulphate, and twenty-four hours later was in a state of collapse and died twelve hours after. While autopsy did not reveal any of the usual signs of cholera, spirilla were present in abundance, and were identified as those of cholera.

Dysentery carriers also occur, but it would appear as if contacts harboured the bacillus for a few days only, and that convalescents similarly are free quickly unless there is left some persisting lesion, as unhealed ulcers, when many cases continue to excrete the bacilli. Still Macalister[13] says: "I am unwilling to dogmatize prematurely, but my experience appears to go far in confirming the view that, as agents in the spread of dysentery, the importance of this class cannot well be over-estimated." In the amœbic type, carriers are more common, and the amœba persist longer in the intestine both in contacts and convalescents.

Epidemic meningitis is another disease where carriers are undoubtedly important factors in disseminating the disease and in bridging over the intervals between outbreaks.[16] There is no other explanation at all feasible for the outbreaks which have occurred in certain parts of the Ottawa valley for the past twenty-five or thirty years. The meningococcus has been proven, time and again, to be present in the noses of contacts, is constantly present in those with the disease, and has been definitely known to have persisted and remained demonstrable in some cases of convalescents and contacts for from six to eighteen months after contraction. That such individuals are dangerous, especially to children, scarcely needs statement. Vincent,[14] in an article in the *Archives de Médecine et Pharmacie Militaires*, shows the dangerous possibilities of such carriers, and states that it is quite an easy

matter to free the carriers from the organisms by systematic treatment.

Similarly, in anterior poliomyelitis, now definitely proved by the work of Flexner and Lewis[15] to be due to an ultra-microscopic organism, and to be transmissible, there can, I think, be no reasonable doubt that healthy carriers play a part in its transmission. We are, as yet, quite at sea as to the possibility of animals or insects being also carriers, the minute characters of the causal germ and the limitation of its pathogenicity to man and certain monkeys narrowing the bounds of experimental enquiry. Last summer I saw a case in which it seemed to me that the only method of infection must have lain through a healthy third person. The case was that of a boy of eight in the country who had not been from the farm for at least three weeks before seizure. Some distance away, perhaps half a mile or more, there had been a child attacked with what was diagnosed as acute meningitis, proving fatal on the third or fourth day. This fatal case had possibly been exposed to poliomyelitis infection from some cases that had occurred in a neghbouring town. During the illness of this child a member of the household of the boy mentioned had visited the sick room and later attended the funeral. Two weeks later the boy became sick, paralysis of the legs developing. Of course infection here might have been carried on the clothing, but unless the virus is more resistant than the work of Flexner and Lewis has shown it to be, it would appear as if carriage by a third person must have been the method of transfer.

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MOUNTING MOIST SPECIMENS

By E. L. Judah

Osteologist, McGill University, Montreal

SINCE the days when the sole idea of preserving wet pathological and anatomical specimens was to suspend them in jars of fluid, regardless of their anatomical position, or their proper colours, considerable progress has been made. With the Kaiserling method of preserving colour, and the square museum jars, which neither magnify nor distort the specimen in fluid, and with a glass frame standing on the bottom of the jar, the specimen is held in perfect shape and the natural appearances are retained.

The pathological specimens should be placed in jars in their correct, anatomical relation, without sacrificing their pathological condition, which is of primary importance. The jar should be of a size to fit the specimen. In the last few years we have worked out a fairly complete set of sizes for each organ, which costs less than the standard sizes made, and which are economical in more senses than one, as the smaller the jar which can be used, the neater the specimen looks, the less shelf space it occupies, and the less fluid is needed.

Take a first-class soda-glass rod of suitable thickness, and from this form a square, overlapping the ends E, over A., Fig. 1, which must

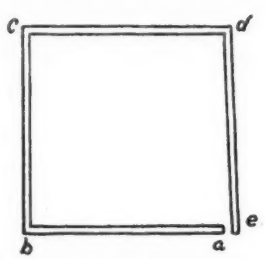


Fig. 1
b, *c*, *d*, shows bend in rod.
a, *e*, are two ends to be fused together; *e*, overlaps *a*.

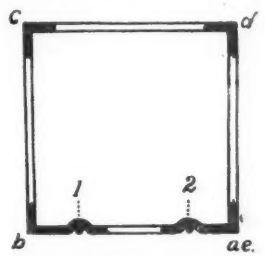


Fig. 2
Black shows places to be annealed.
1 *and* 2, front view of feet.

be fused together and annealed, Fig. 2, AE. With heavy glass rods it will be necessary to anneal the corners, AE.B.C.D., Fig. 2, (the glass

is annealed in a white flame by shutting off the air blast from the blow-pipe). To this frame the feet are attached. Heat the bottom of the frame, Fig. 2, into which is pressed a piece of rod, the width of the bottom of the jar, press down even with the bottom of the frame, Fig. 2, Nos. 1 and 2, and thoroughly fuse together. The two ends of the foot are bent downwards: X.Y., Fig. 3, place on the bottom of the jar while still hot and press down at the proper angle, Fig. 4, X.Y. As soon as set and before cooling remove from the jar and anneal thoroughly, as in Fig. 2, Nos. 1 and 2. Put the other foot on in the same way. Fig. 5 shows the finished frame in the jar, the glass frame pressed up above the feet and the top of the frame slightly below the cover of the jar. The frame may be put either at the back or front of the jar, as required.

These glass frames are not the only use to which the glass rods may be put. Fine glass hoops, crescent shaped pieces and strips made very fine with small eyes in each end, may be concealed in the specimen,

FIG. 3

x, *y*, show feet before pressed into proper angle.
z. Bottom of jar.

FIG. 4

x, *y*, feet in position in frame before annealing.
z. Bottom of jar.

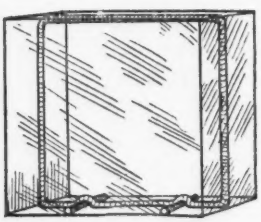


FIG. 5

The finished frame in the jar.

stretching and holding it in shape. Fine rods of blue and red glass can be used to show the veins and arteries, yellow to show the ureters, and an opaque glass for any special condition. No metal must remain in contact with a specimen at any stage of preparation, as serious damage from rust will result.

The specimens are attached to the frames with as fine a thread as possible, suspending it from the top and stretching it to the sides, also holding it to the bottom in its natural position; leave long ends to the threads used, tying in a double knot to be readily undone; when the mount is finished and the specimen permanently placed on the frame, tie the threads firmly and clip off the ends, concealing the knots in the specimen.

SOCIAL PROBLEMS IN RELATION TO MEDICINE

By Richard Monahan, M.D.

SEVERAL years ago Dr. Richard Cabot, physician-philanthropist of Boston, realized what becomes apparent to us all, after some years of medical practice; namely, the limitations of the pharmacopœia in medicine, and that even the healing of the operation wound in surgery is often merely the beginning of a long process of repair, requiring for its continued progress conditions which originally must have been natural accompaniments of the creation of human life, but which are so often absent in our large cities, and which are certainly non-existent, in some form or other, in the case of the poor and maimed, who make up our present-day hospital patients. Such conditions, it is hardly necessary to add are, an abundance of good food, sunshine, and fresh air, as well as livable social and hygienic conditions. The fact was therefore forced upon Dr. Cabot that, while the out-patient department is the best means at our command for diagnosing disease, in the case of many conditions such as tuberculosis, malnutrition, dyspepsia, neurasthenia, varicose ulcer, heart, and joint diseases, the cure has come to mean, largely, education, prevention, and financial help. Moreover, the home conditions must be studied, in so far as they may bear on the causation of the maladies in question; and it is in relation to the social aspect of the case that the out-patient department has been found deficient, for the hospital physician has no time to visit the homes of public hospital patients. In order that this may be done systematically, social workers are required; hence, the Boston Social Service Department was organized with headquarters in the large, sunny corridor on the main floor of the out-patient department of the Massachusetts General Hospital.

The organization of this department is as systematic as that of any other outdoor clinic. All cases which do not seem to be absolutely disposed of by prescription or other form of treatment, surgical or otherwise, under the personal direction of the physician in charge, are referred to the social clinic, in the same way as a nervous or ophthalmic case is referred to the neurological or ophthalmological clinic. Social Service reference slips are therefore supplied, on which the physician writes the medical diagnosis, with his reason for so referring the patient. In this connexion, it may be mentioned that these workers are in direct coöperation with the Boston Bureau of Information of Associated

XUM

Charities, where the names of all patients who come to them are registered, with pertinent details. The object of this procedure is two-fold: first, it affords ready, though strictly confidential, reference when necessary; secondly, it avoids loss of energy and clashing of efforts by eliminating duplication. Another invaluable aid is the "Directory of Charitable and Beneficent Organizations," a book of nearly five hundred pages, affording an easy means of ascertaining the resources of the community.

Let us suppose that a patient has been referred to this department in the manner described, with the medical diagnosis of pulmonary tuberculosis. We are told that fully thirty per cent. of the total population of Great Britain is on the edge of poverty, while ten millions of the United States are underfed. It is not surprising, then, to find the principles underlying the work of the Boston Social Service Department to be as follows:

Poverty causes underfeeding; underfeeding causes lowered vitality; lowered vitality causes disease; disease causes physical disability; physical disability causes unemployment; unemployment causes poverty; the one running into the other, just as the seasons merge, the one into the other.

If we compare the probable condition of primitive man with that of the ordinary urban worker of to-day, we shall find many features in favour of the former. The early morning whistle of the factory, for instance, did not warn primitive man that it was time to start his abnormal daily existence, which, if continued long enough, would seek out the weak spot in his vitality, and conspire towards his gradual annihilation. Neither did any evening screech send him home to what are now absolutely squalid conditions, with insufficient air space to supply the oxyhæmoglobin requirements of himself and family.

Rather the sunshine, fresh air, and good food were natural concomitants of the life and existence of the primitive man; he had merely to till his land, and he and his family's provender was assured. He had not to worry over not getting work. The factory whistle was not the arbiter of his daily life, insolently exacting when he was working, and tauntingly aggravating him when he was idle. Man then was not a trespasser in his own country, for, as late as the sixth century, "property had not yet reached the stage of absolutely personal possession, which the social philosophy of a later time falsely regarded as its earliest state."

Contrast this primitive, idealistic condition with Philip Gibbs' impression of Medland Hall, which is filled nightly with London's outcasts, in all stages of starvation, and was patronized last year by

nearly 200,000 men: "I stood in a great dormitory, so dimly lighted that, until a few minutes had passed, my eyes were muffled by darkness. I held my breath, struggling against a feeling of sickness. The moist warmth of many human bodies in a heated room closed about me, so that for a moment I felt a little faint. As my eyes pierced the veil of the dim twilight I saw that I was in a long room, which was one side of a gallery built round an open shaft in a great hall. Below me were three other galleries, and at the bottom was the floor space of the building. On that floor, and in each of the galleries, ranged side by side, without an inch of space between them, was a large number of black wooden boxes looking like open coffins. And in each of these coffins lay a living man. I was in the dormitory of Medland Hall, Stepney, the only free lodging-house in London, the richest city in the world."

Bearing these considerations in mind, let us go back to our patient, who has been waiting all this time while we have been indulging in the musings which his condition suggested, and which we can regard as part and parcel of the ætiology of the case. The diagnosis above mentioned has been made in the case of a public hospital patient; what then?

The man's means are probably scanty; he has few, if any, influential or powerful friends. He may have a mother, wife, children, brothers, or sisters actually depending upon him; he may be absolutely dependent upon his daily, weekly, or monthly salary; he has put by little or nothing, and he is living under impossible conditions.

Furthermore, it means that faulty economic, social, and hygienic conditions, which are bearable in the case of healthy individuals, but which are more often incompatible with normal bodily health, strength, and vitality, must be corrected or modified when ill-health, and especially that of tuberculosis, becomes a factor. An abundance of good food, fresh air, and normal surroundings becomes a necessity. Fresh eggs and milk, which have gradually become luxuries instead of essentials to the poor, must be secured. Perhaps removal from the usually crowded districts of tuberculous patients to less congested ones, or to the suburbs, must be effected. At least separate beds and rooms, where there is actual overcrowding in the house, are imperative.

This may, and often does, mean giving up all work temporarily, and possibly removal to a sanitarium for several months. All these are actual considerations, and when to these problems are added the support of a family, if the patient be the chief wage-earner, or, if the mother be the sick one, arrangements for the care of children, or the carrying on of the work of the household, the full nature of the work will be appreciated.

XUM

The casual dilettante might easily be dismayed by the complexities of the different issues which have to be faced, but the social worker sets to work to solve them. The financial and social surroundings of the patient are ascertained; his condition is explained to him; and his home is visited by a volunteer visitor into whose charge the patient is given, and who carries the real burden of attending to details and getting the patient and his family aroused to an understanding of what must be done if a cure is to be effected. At the same time paper napkins or sputum cups are supplied. It will be seen from this that visits to the homes of the patients form an absolutely essential part of the treatment, with the additional object in view of educating and training them so that they will no longer be a menace to their families, friends, and the public.

If it is decided, for one reason or another, that the case is a suitable one for home-sanitarium treatment, he is persuaded to join one of the Boston tuberculous classes, if he be a resident of Boston, or one of the suburban tuberculous classes, if he be a resident of the suburbs. The nature of the treatment is briefly outlined, the patient shown the reason for joining the class, which is held once a week, and he is then provided with a thermometer, and a record book, in which he is taught to keep a diary of his daily condition and doings. At the weekly class meetings, his temperature, pulse, and weight are recorded, with the date. At these meetings, when the physician is ready, each patient, in turn, sits down with him at the table. His home record of the past week is looked over, and advice or encouragement given, as the case may be. In the meantime, the volunteer has come to a decision in regard to the question of the patient's giving up work, and whether he is to sleep out-of-doors or not, and if so, how this may best be done, utilizing the verandah, porch, flat roof, or back-yard, according to circumstances, or being content with arranging for the front room to be thrown open to the fresh air for this purpose. Every visitor makes one visit a week, as long as such is necessary, and is directed always to bear in mind that fresh air by night and by day, more and better food, and rest in the fresh air, are the things to be sought; how to obtain them in the cheapest, simplest, and most practical way is the sole aim. The constant use of drugs is discouraged, and olive, or cod liver, oil is given as a food.

The home-sanitarium treatment naturally has its limitations. It also has its disadvantages, one of which is that, while the danger of contagion in the case of active pulmonary disease is distinctly lessened, it is not eradicated; in other words, there is no segregation.

The Royal Edward Institute of Montreal, for instance, is conducting

its work admirably and vigorously. It, too, has social workers and a tuberculous class; but the Royal Edward is only a dispensary. We are in urgent need of sanitariums in Canada.

Massachusetts, one of the smallest states in the union, has now four state sanitariums, and the province of Quebec, for example, has not a single one. Sanitariums do not represent an occasional demand, but a daily need, and are absolutely essential if we are to deal properly with tuberculosis, for it must be remembered that the incipient cases of to-day are the chronic cases of to-morrow, and the chronic cases of to-day beget the incipient cases of to-morrow. There are very many instances where home treatment is absolutely impossible. Moreover, home treatment requires friends. We are encouraging hundreds of thousands of individuals to enter our country, and we must accept the responsibility which such an influx involves.

The Massachusetts state sanitariums are situated at Rutland, Westfield, Middleboro, and North Reading, all in Massachusetts, and are for different stages of the disease, and for men and women. The charge is $4.00 per week, and if the patient, his family, relatives, friends, or other interested persons cannot pay the charge, the village, town, city, or municipality where he is domiciled, is charged with it. The responsibility is placed somewhere, just as it is in any other infectious disease. Moreover, these sanitariums are not closed to non-residents of Massachusetts, or to non-citizens of the United States, and all have been erected at a minimum of cost and delay, and a maximum of utility. The capacity of each is about three hundred patients.

In order to convey a clear idea of the practical nature of the work of the Boston Social Service Department, not only in regard to tuberculosis, but in other directions, I shall refer to some discrepancies which Mr. G. K. Chesterton has commented on in connexion with certain medical examinations which are frequently inflicted upon the poor of London:

"The son of a widow, a needlewoman, let us say, is sent by a strict law to a special school. It is there discovered that he cannot see the blackboard very plainly. A doctor descends upon the widow, and tells her to take her son to some remote hospital to be examined. She does so, and most probably she finds she cannot be attended to. She has to travel to the distant hospital again and perhaps again, spending sums on trams and trains which correspond to a five-pound note for you and me. Eventually her son's eyes are examined, and there is an end of the matter, for although that happy youth has the rapture of regarding a precise definition on paper of the sort of glasses he ought to have, his mother is no more capable of buying them than she is of buying

XUM

champagne or diamond shirt-links. If she wants the simplest medical apparatus, she must fall back upon one of the most elaborate and fantastic of all forms of individual charity.

"I have taken this one case of medical examination among the poor because it happened to come my way; but the thing is being done everywhere, in every shape, and in every department. Officials come round and leave little cards about the hygienic way in which to give children food. They leave the cards; they do not leave the food. Lady scientists come round with bright, little essays about milk; they do not come round with the milk. Poor children are told in laundry classes to pass a garment through three waters, but nobody gives them so much as one water. Children are told in cookery classes to pass a viand from a saucepan to a stewpan; but nobody offers to lend them even the saucepan."

The Boston Social Service Department, on the other hand, steps in and endeavours to make it possible to procure the spectacles, the milk, the bread, the water, the saucepan, or whatever it may be, by arranging for and securing the logical and intelligent coöperation of the family, relatives, friends, beneficent organizations, or any other agencies which can be induced to interest themselves in the patient's cause; and if necessary the municipality or state is called into requisition.

The physician diagnoses the medical condition and treats it as such, aided by the social worker, whose investigations may reveal such causes in the background as the following: ignorance of hygiene, worry, lack of family coördination, maladjustment to environment, human hunger, faulty habits, neglect, shiftlessness, maternal incompetence, poor cooking, ignorance of community resources, ignorance of language and customs, bad housing, lack of home ties, lack of opportunities, heredity, old age, poverty, lack of industrial training, unemployment, irregular employment, overwork, accidents. It is the endeavour of the social worker to eradicate, overcome, correct, or modify these social diseases, which are frequently as chronic and as hard to cure as physical ills, and, indeed, some of them are incurable.

In conclusion, I shall merely mention that, among other things, workers in Boston are making hospital ward treatment more effective by carrying out its more essential features in the home; they arrange loans for patients requiring orthopædic or other surgical or medical apparatus; they endeavour to lessen the apprehension of individuals who are obliged to take an anæsthetic, and dread losing consciousness in the presence of strangers, by entrusting them to the care of a cheerful worker, who visits them previously, and later assuages their fears by

being present in the anæsthesia room. Their work in connexion with ophthalmic patients, and especially in so far as sclero-keratitic conditions are concerned, is exceedingly important, and in addition the problem of finding work for the physically handicapped, receives attention.

It will be inferred from the foregoing that the Boston Social Service Department is not only improving the condition of many men at the present time by placing them under simpler, healthier, and purer conditions of living, but that they are doing a great deal in the direction of what will likely be the medicine of the future; namely, preventive medicine, which means the prevention of the effects of disease, together with the elimination of the cause, when possible. It will have as its ultimate aim the complete eradication of disease, in so far as is possible, and will only be rendered practicable by thoroughly educating the individual from birth, and by giving the child a fair fighting chance from the start. It will mean the adoption of good hygienic methods as applied to all sanitary methods, the gradual annihilation of poverty and slums as they now exist, and the consequent improvement in social and economic conditions which will necessarily follow.

"THE experience of foreign countries seems to indicate that the midwife, even when licensed and controlled, is always a source of possible danger to the community. The same is true in the United States. A recent investigation in Ohio, for instance, showed that over fifty per cent. of the midwives practicising there use no prophylactic measure against ophthalmia neonatorum. The essential inconsistency of simultaneous practice in a community by obstetricians and by midwives is that it involves a divided responsibility and a double standard of efficiency. The midwife may be defined as a person attempting to practise obstetrics without complete or even adequate medical education. The tolerance of such persons is an anomaly in an enlightened civilization. The midwife is a relic of mediævalism, unhappily extant in the countries of the Old World, but whose persistence in our own community should not be encouraged by any form of recognition."—*The Boston Medical and Surgical Journal.*

XUM

Case Reports

MISSED ABORTION

MRS. B., aged 38, multipara, bore her last child about four years prior to her last menstruation in the latter end of December, 1908, that is, between Christmas and the New Year. This was followed in January or February, 1909, by nausea and vomiting, which lasted till the end of March or the beginning of April. Her breasts became swollen and painful in February, and the patient considered herself pregnant and consulted a physician for confirmation in the latter end of February, 1909, as far as her memory serves. No definite opinion was given, and in June, 1909, four months later, she was reëxamined and no increase in the size of the uterus was found. During the interval she had had no show of hæmorrhage, no illness, and in her history there was nothing definite or even suggestive enough to fix the time of fœtal death. Her morning nausea ceased the latter end of March, the mammary tenderness disappeared, and she was in her usual state of health. At the time of her examination in June, the uterus was but slightly enlarged, was retroverted, and was manually replaced, and she was fitted with a pessary, which she wore continuously thereafter.

Presumably, fœtal life was not continued later than the third month, likely March, 1909, as a decided uterine enlargement most certainly would have been made out at the time of the second examination in June, 1909. During the evening of March 28th, 1910, she noticed a slight show of blood; there was no pain then or later. During the day of April 14th, 1910, there was a watery pink discharge accompanied by pain in the back, and this latter increased in severity during the 15th, and especially about 5 p.m., when the patient states the pain was like "labour pains," and prevented her from eating her evening meal. Then there was a lull and she went to the theatre, and on retiring proceeded to take her usual evening douche, when a complete cast of the uterine cavity came away. There had been very little bleeding during the afternoon and evening, and there was none following the expulsion of the cast.

I saw her about half an hour later, and found that the cervix was large, soft, and patulous; the os nearly as large as a silver dollar; and there was a little blood in the vagina. There was no odour to the

specimen nor to the uterine discharge during her uneventful convalescence. When I paid my last visit I re-introduced a ring pessary, the uterus was in normal position, and beyond a much relaxed outlet, there was nothing abnormal.

She resumed her menstrual life one month later, May 5th, 1910, this being the first menses in seventeen months. It lasted one week and was free from pain. At no time during the period of amenorrhœa did she have chills, fever, or putrid or offensive leucorrhœa, and was, for her, unusually well. From the last menses till the extrusion of the placental remains it was one year and four months, less eleven days.

During 1909 she had been examined by two physicians, who told her, rightly enough, that there was no evidence of progressing pregnancy, and in the absence of any symptoms pointing to an early abortion or even to the death of the fœtus, they likely doubted the pregnancy from the first. The amenorrhœa of fifteen months the patient at least attributed to an early menopause.

In this case the remains of a fœtus were retained in utero for about thirteen months after the date when life likely ceased. The medico-legal significance of the recognition of such cases is apparent, and yet I find but one instance where it has been of importance. This was a case of eighteen months' duration in 1892-3-4, reported by Landucci in Webster's "Text-book of Obstetrics," 1903.

The pathological report on the specimen is as follows: S.—10—232, Montreal General Hospital. The mass, 6·5x5·5x3·5 cm. with a smooth anterior face and a rough pinkish convex posterior surface, is pear-shaped, like the cavity of the uterus. On section it shows irregular reddened surfaces with, near the lower pole, a small, smooth-walled cavity. It weighs 53 grms. Under the microscope, the slides show necrotic, placental tissue, decidual cells, villi, and areas of old hæmorrhage. Diagnosis—necrotic placental tissue.

Montreal. CHARLES K. P. HENRY.

XUM

A RUPTURED ECTOPIC GESTATION, OCCURRING IN THE THIRD WEEK OF TYPHOID FEVER, AND COMPLICATED BY TYPHOID PERFORATION OF THE ILEUM; OPERATION AND RECOVERY

MRS. D., aged 29, her fifth pregnancy. Dr. Hargrave saw her first on October 8th. She had then been indisposed—indigestion and slight headache—for eight or ten days. There had also been considerable abdominal pain; recurrent attacks were felt at first over the stomach and spleen, but now were complained of in the lower part of the abdomen. There was nausea, and at different times the patient had vomited. With the last attack of pain there was some uterine hæmorrhage, interpreted by the patient as a delayed, menstrual period, for she had menstruated last on August 17th, some seven weeks before. The pulse-rate and temperature were normal, but the tongue was coated, and the abdomen somewhat distended, tumid, and sensitive, especially over the spleen. In the course of his pelvic examination, Dr. Hargrave removed from the vagina an abortion sac or a decidual cast and a large quantity of blood-clot; but there was no trace of embryo or amniotic sac. The natural conclusion to be drawn from this clinical picture was that the patient had suffered an early uterine abortion—the amenorrhœa of seven weeks, the recurrent pain and uterine hæmorrhage, and the expulsion of decidual tissue.

The patient's general condition, however, did not improve. Two days later, on October 10th, the temperature was 100°, there were still anorexia and abdominal pain, and the pulse, though not rapid, had become feeble and dicrotic. As there was no sign of any pelvic infection, and as the spleen had become distinctly palpable, Dr. Hargrave became suspicious of the presence of enteric fever, and treated the patient accordingly. For the following twelve days the illness ran the typical course of an early, mild, enteric infection,—furred tongue, anorexia, headache, fever 100° to 101°, a palpable, tender spleen, and some abdominal discomfort. The lochia gradually diminished. But during the night of October 21st there was a seizure of sharp, lancinating pain in the hypogastrium, a different type of pain from that previously suffered; and, coincident with this, there appeared a copious discharge of dark blood from the uterus. A pelvic examination on the following day showed a uterus large, tender, and somewhat fixed, and behind it, in the pouch of Douglas, an ill-defined, semi-fluctuating mass. Yet,

for six days now the patient remained fairly comfortable, till October 28th, the picture of enteric fever of a more established, later stage, with temperature 101° to 102°, being again conspicuous. On the morning of October 29th, after using the bed-pan, there was a second seizure of very severe pain in the lower abdomen, and soon there ensued abdominal distension and rigidity, and the uterine discharge was again copious. The mass behind the uterus was found to be increased in size, and Dr. Hargrave was forced to conclude that, in spite of the presence of enteric fever, there must also be a ruptured, ectopic pregnancy of the chronic or "leaker" type. He accordingly at once sent the patient to hospital, under my care.

On her admission, the temperature was 102° and the pulse-rate 120. The severe pain had ceased, and the abdomen, while distended and generally sensitive, was not rigid. A distinct, rounded, fluctuating mass occupied the hypogastrium, rising to within an inch of the umbilicus. Pelvic examination disclosed signs of an old Neisser infection in the urethra and vulvo-vaginal glands. The uterus was enlarged, pushed forward close to the symphysis, and riding upon the fluctuating mass of uneven consistence whose lower pole occupied the pouch of Douglas. The uterine appendages were lost in this mass, and there was some discharge of blood from the uterus. The patient gave an unsatisfactory history, and the signs of the old gonorrhœal infection below made me at first suspect the possibility of this abdomino-pelvic mass being inflammatory, and due to an exacerbation of an old, bi-lateral, salpingo-ovaritis. She was, accordingly, put to bed with an ice-bag. The following day the temperature sank to 100°, but rose again to 102°; the pulse-rate of 120 remained unchanged. A blood-count gave the following results: hæmo-globin, thirty-five per cent., erythrocytes, 1,830,000, leucocytes, 17,000. A typical picture this of secondary anæmia, accounted for by the blood lost during the supposed miscarriage, the leucocytosis being occasioned by the tuboövarian infection.

The following day, November 1st, the pelvic mass being in no sense diminished in size, I operated. I performed first an exploratory, posterior colpotomy, thinking in this way to drain the pelvis. A large quantity, about one pint, of dark, tarry blood at once gushed out as I opened the pouch of Douglas. It had been under considerable pressure, though intra-peritoneal it had been encysted, and had the unmistakable odour of a colon infection.

I at once opened the abdomen from above, and separating old and firm adhesions of omentum, cæcum, and pelvic colon, discovered and removed a gestation sac in the right Fallopian tube. This sac was in

XUM

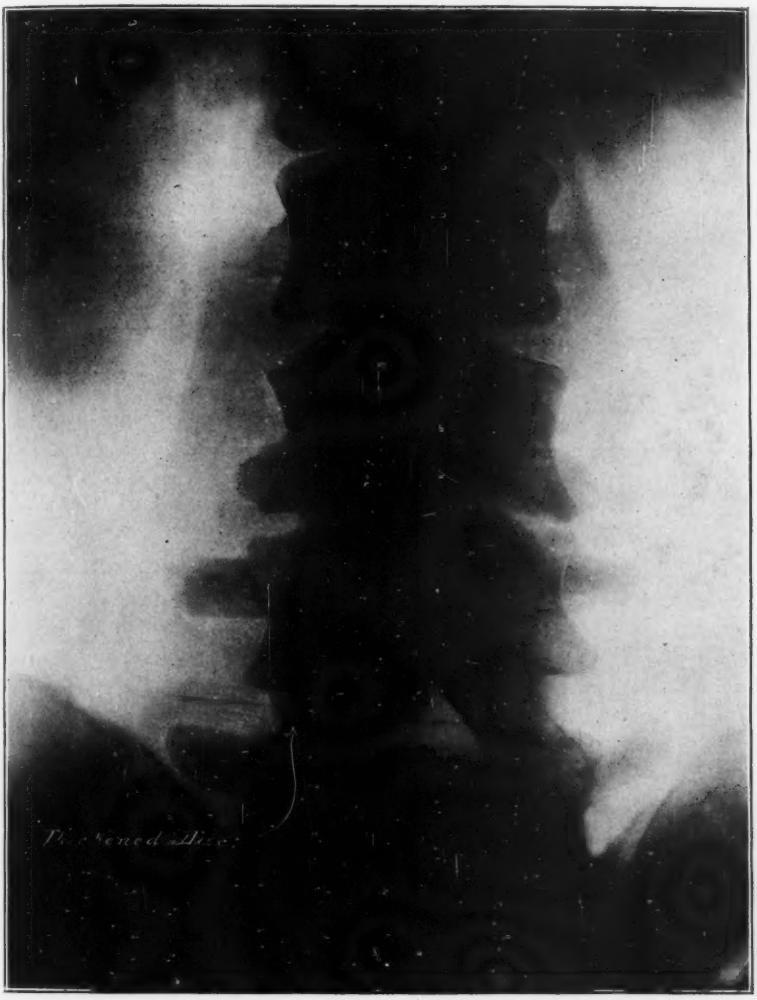
the ampulla. Successive, intra-tubal ruptures of the capsularis had occurred, the blood-escape in consequence being through the ostium of the tube. There was no sign of embryo or amniotic sac. There was abundant evidence of old, chronic, catarrhal salpingo-ovaritis, and the adhesions so formed with omentum and bowel had roofed in completely the extravasated blood in the pouch of Douglas. In separating these adhesions, a length of ileum, with adherent blood-clot, came into view. This ileum had lain across the top of the pelvic tent, formed by the old adhesions between the uterine appendages and omentum. It had become glued to this roof by a recent, inflammatory exudate, occupying, as it did, the reactionary zone above the encysted, hæmorrhagic cavity. The walls of this ileum appeared thick, reddened, and œdematous. As I wiped away the blood-clot, a small perforation, through which flatus and fæces escaped, was found. The edges of this aperature were thin and smooth. A little farther on a second aperture was discovered; and, again, a little farther, a small bluish area showed where both muscularis and mucosa were ulcerated, the peritoneum only remaining intact. By palpation I could feel no thickened areas or Peyer's patches in the course of the bowel, and I was at a loss to account for the condition. I closed the apertures with a Czerny-Lambert suture, and, establishing drainage into the vagina by means of a large tube, I closed completely the abdominal wound.

The patient was kept in the Fowler position, and her progress for the next few days was stormy. A Vidal reaction, taken on the day following the operation, was pronounced by Dr. Bruère as extremely suggestive of enteric fever, marked clumping occurring, though the bacilli preserved their motility. A second Vidal on the third day, and a third on the sixth day, were still only suggestive; but a fourth Vidal on the eighteenth day was definitely positive. The patient's recovery was complicated by infection of the abdominal incision, but no fæcal fistula formed. The incision in the vaginal fornix was healed on the tenth day. The patient sat up on the forty-fifth day, menstruated normally and without pain five days later, and then left hospital thoroughly recovered.

The microscopical examination of the tubal wall of the gestation sac showed that the fœtal villi were many and distinct, with a marked, decidual reaction in the tissue round about them. This case is a most unusual one, and in it I think the surgeon succeeded better than he deserved. The onset of the illness was peculiar and most misleading, the symptoms of enteric fever so obscuring the picture.

The outstanding features of the case are the following: the recurrent attacks of sharp, lancinating pain in the lower abdomen, accompanied

To illustrate Dr. Halpenny's paper on "Two Cases of Typhoid Spine."
Page 136, February, 1911.



To illustrate Dr. Halpenny's paper on "Two Cases of Typhoid Spine."
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by discharge of blood from the uterus, were here, as is so often the history of these cases, the characteristic signs and symptoms of a ruptured, ectopic pregnancy of the chronic or "leaker" type. The situation of the perforated ileum within the zone of reactionary exudate at the periphery of the encysted hæmorrhage accounts for the fact that there was no wide extravasation of the bowel contents. This lymph exudate, in which the bowel lay, kept the apertures effectively sealed. To this fact, I think, the patient undoubtedly owes her life.

W. W. CHIPMAN
Montreal. I. L. HARGRAVE.

"NOUS sommes heureux de signaler à l'attention de nos lecteurs le nouveau mouvement de progrès de notre association nationale de médecine, la *Canadian Medical Association*. Avec ce mois de janvier elle commence la publication d'un journal mensuel qui réflètera l'opinion de la profession canadienne du Pacifique à l'Atlantique. Nous conseillons vivement à nos collègues de s'enrégistrer comme membre de cette association. La cotisation annuelle de cinq dollars donne de même droit à la réception du journal de l'association."—*Le Journal de Médecine et de Chirurgie.*

XUM

Editorial

MEDICAL SCHOOL AND HOSPITAL

THE wave of increased interest in the subject of medical education, evidenced in the United States by the publication of the Carnegie report, and in Canada by the discussions over the Roddick Bill, both at Ottawa and in the various provinces, brings forward once more the subject of the relationships that should subsist between the medical school and the hospital. The simplest solution is that now being accepted by Toronto; namely, that a medical school should possess its own hospital; or conversely, as has happened by natural evolution in London, that the hospital should develop its own medical school. But although the simplest, both of these plans have their defects. A large city may already possess important hospitals, and the establishment of another, complete in all departments, may tend to over-hospitalization with all its attendant abuses. Its establishment, too, is apt to cause a certain amount of opposition on the part of those other hospitals and their staffs, so that their material is largely lost to the school, and, as we shall proceed to point out, the work accomplished by these other hospitals becomes lowered in quality. On the other hand, the establishment of a school in connexion with each hospital, means, as in London, the bringing into being of an excess of struggling, imperfectly equipped institutions, labouring under the imputation that funds contributed for the care of the sick are being unjustifiably diverted to other purposes. In other words, the first of these plans, even where conditions are favourable, must be entered into with extreme precautions, so that existing hospitals be not alienated. The second plan, from economical grounds, deserves no consideration. The majority of our medical schools and large hospitals have to

exist under separate management and have to arrive at an agreement how to work together to the greatest mutual advantage.

It must be laid down, in the first place, that for a hospital to take, and to maintain, first rank its wards must be freely open to medical students, and its staff be connected with a medical school. Failing this, the hospital cannot be regarded as of the first order. This is so fully recognized by the profession at large that it might seem wholly unnecessary to give the reasons that lead to this conviction, were it not that it is by no means so fully realized by laymen, by donors, and by the governing boards of hospitals. It may, therefore, be of use to recapitulate the main reasons. The prime object of a hospital is to assure to those who are sick the most efficient treatment: the presence of students in the wards is the best means of ensuring the best treatment. In the first place it attracts to the hospital staff the most capable members of the profession. Your keen, active, medical man—and this is the argument that appeals most to the business men who constitute governing boards—infinitely prefers to be associated with an institution at which he can demonstrate his capacity to those who are to be the future practitioners of the district, since he depends upon these in the near future to send to him the difficult cases which they cannot venture themselves to treat. The same man knows full well that the presence of students in his wards is a constant stimulus to the best work. It is one thing for the busy practitioner, every minute of whose time is valuable, to make the round of his wards accompanied only by his resident and the senior nurse, so easy then to accept without question the diagnosis or report of the resident, to give a mere glance at the case, to complete the round in ten or fifteen minutes, and then rush off to see Mrs. A., or the progeny of Mrs. B; but it is a very different thing when there is a trail of medical students streaming after him through the ward: at each bed he knows some student or students have made an examination, and, if he is to make a favourable

impression on those students, he must himself master the case. There can be no slipshod work in the wards where students have entry, or, if there is, it is to the direct loss of the professional reputation of the attending physician or surgeon. And, although thus the examination of ward patients may at first sight seem to be a disturbing procedure, which in interest of the patient's health and well-being should be reduced to a minimum, nevertheless, on second thought, it is seen that there is nothing more conducive to the best interests of that patient, both as regards diagnosis and treatment.

The association of a medical school with a hospital maintains that hospital at the highest level of efficiency in every respect, so far as the funds of that hospital permit; it ensures that the brightest and most capable practitioners of the locality compete for positions on the staff, that the medical board has a personal knowledge of the most promising among the student body, and thus can select the best resident staff, best not merely in their book knowledge and in their power of passing examinations, but also in professional spirit and attitude towards the patients; ensures that the nursing staff is alert and well trained, that the diagnosis of individual cases is most critical and most thorough, that the treatment and care of the patient in the hospital is the best possible because subjected to constant observation.

That this is so is proved by the experience of all countries. The great hospitals of the world, those that have made their name and fame by the greatness of the results achieved in them, have one and all been hospitals connected with medical schools. We cannot recall a single exception, save, it may be urged, the Mayos' hospital at Rochester. But there is the constant attendance of some forty visiting surgeons year in, year out, men from distant parts of the United States and Canada, and from Europe, who have come to learn the methods and technique of these surgeons. This, to all intents and purposes, constitutes a school of the highest order, and

achieves what we have pointed out to be the main merit of the school; namely, the constant stimulus of such to the highest level of efficiency on the part of the hospital and its staff.

It is interesting to see how long it has taken for this to be realized in the United States; how there the boards of governors of many large hospitals accustomed to autocratic methods as presidents and directors of commercial undertakings have been unable to comprehend the spirit and the methods of the medical profession; how, in the first place, they regarded the medical staff in the same way as they regard the heads of departments and clerks in their own businesses, and so in too many hospitals have given the medical staff no adequate voice or representation in the management of the hospital; how in many instances the influence of the matron upon the board of management has been greater than that of the medical staff; and how they have placed ease of management before the best interests of the patients. In many American hospitals students have been forbidden entry into the wards, although nominally these hospitals are connected with medical schools. All this is rapidly changing, and this notably, so that in New York, where, in order to preserve its standing and ensure for the future that the leading physicians of the city will be upon its staff, the Presbyterian Hospital, to mention one example, has found itself forced to ally itself intimately with the College of Physicians and Surgeons, lest in a few years it should fall into second rank.

It is well that these matters be kept in mind in our Canadian cities possessed of medical schools. There are, we know, difficulties and irritations in connexion with "combines," and more particularly in connexion with the free entry of students into the hospital. Some students, we know, are uncouth, and do not realize the value of the privileges afforded to them, or the responsibilities attending these privileges. But the disadvantages are as nothing compared with the

gain. And the hospital that does not gladly coöperate with the medical school thereby seeks to lower its rank, and will assuredly find its place in the estimation of the community taken by the hospital that does.

THE VINDICATION OF LAVAL

MEDICAL education in Canada has nothing to fear from the fiercest light which can be brought to bear upon it. If defects are revealed, they will be remedied. Nothing is desired but the best.

During the past year the Canadian medical schools had the privilege of being inspected formally on behalf of the Carnegie Foundation for the Advancement of Teaching. There was every reason to hope that the work would be done thoroughly, and that the authorities who are charged with the maintenance of medical education, should be furnished with a body of sound criticism, based upon careful observation. In this they were disappointed. The work was carelessly done and the report was inaccurate and misleading.

We have already dealt with the report in so far as it concerned Queen's and Halifax Medical College, and showed in detail how slight a value it deserved. In the case of the faculty of medicine of Laval University, Montreal, the value is even less. Unfortunately, Dr. Flexner got hold of the wrong book. He thought he had in his hand the "catalogue" of the Montreal school, when in reality he was reading the announcement of an entirely different institution. Accordingly, it is not difficult to understand how far he was led astray. Dr. E. P. Lachapelle, the dean, called Dr. Flexner's attention to the error, and at once received a reply, which we are privileged to publish:

"Your letter of January 31st, just received, explains completely my error and uncovers its source. Through

inadvertence, which I profoundly regret, I did use the catalogue issued by Laval University of Quebec and apparently referring to the schools of both Montreal and Quebec. As you rightly point out, I obtained from this catalogue the number of your professors, instead of consulting the Montreal catalogue, which, in some way that I am unable to explain, I did not use, though from it I obtained information on other points.

"My statement on the subject of anatomy you misunderstand. As it is given under 'Laboratories,' it referred only to the work in the laboratories, and, of course, does not exclude the usual teaching and lecturing. I meant to point out that, as is the case in many medical schools, research work in anatomy, embryology, etc., was not part of the regular laboratory precedure.

"President Pritchett's note will, I hope, convince you that I endeavoured to see the dean or the secretary of the school; but being unable to do so, I asked to be referred to some one to show me through the building. I beg you to believe that the errors of detail which you have pointed out, and which I now very clearly see, I very deeply regret; and I shall take every possible step to acknowledge my fault and to set Laval University right before the world.

"I am sending to the Journal of the American Medical Association a statement, a copy of which I enclose, and I shall be very happy to have you use the same as freely as possible."

The statement to which Dr. Flexner refers was published in the *Journal of the American Medical Association* on February 11th, and we take pleasure in reprinting it:

"Permit me to utilize your columns in order to rectify an error in Bulletin 4 of the Carnegie Foundation, dealing with Medical Education in the United States and Canada. I refer to my account of the medical department of Laval University, Montreal. This institution is entirely distinct from Laval University, Quebec, which also has a medical

XUM

department. The Quebec school, however, publishes in its catalogue certain data respecting the Montreal school, and I inadvertently give in my account of the Montreal school some material taken from the inadequate statement in the Quebec catalogue. The staff of the Montreal school numbers fifty, of whom twenty are professors. The number of beds in the two general hospitals used should have been given as 290, and an additional statement that the school has several supplementary hospitals should have been made. The lectures on chemistry for medical students are given by a professor in the medical faculty." Signed, Abraham Flexner.

The unfortunate element in the whole transaction is that the report has been so justly discredited in so many respects, that it is difficult to know what importance to attach to the parts which have not been so successfully challenged.

ROYAL COMMISSION ON TUBERCULOSIS

THE Royal Commission, which has been enquiring into the prevalence of tuberculosis in Quebec, has presented its report to the government. The Commission calls attention to the fact that while other countries, by active measures, have reduced the mortality from this disease by forty to fifty per cent., in Quebec the death rate remains stationary. A vigorous campaign is therefore urged. The following measures against the disease are outlined: educational campaign, obligatory declaration of tuberculosis, obligatory disinfection, rules against spitting in public, anti-tuberculosis dispensaries, isolation of sufferers. Under the heading of preventive measures, are the following: medical inspection of schools and industrial establishments; condemnation of unsanitary dwellings; the prevention of alcoholism; the establishment of "preventoriums;" schools in the open air; vacation colonies.

The Commission recommends that the following measures be put into execution immediately: more rigorous application of laws contained in the statutes regarding tuberculosis; elementary instruction on hygiene in the primary schools, normal schools, and other houses of education; popular instruction under the direction of the board of health; medical inspection of schools and shops and factories; the establishment and maintenance of anti-tuberculosis dispensaries in the principal centres of the province; isolation of advanced cases among the poor; establishment of open air schools for weak children who are prone to tuberculosis; treatment of curable cases by the "class" method, as it has been demonstrated that this is a method of treatment almost equal in results to sanitariums and much more economical, giving to the patients besides the opportunity of living with their family; legislation to prohibit the employment of young children; investigation and legislation regarding the hours of labour of adults in factories; legislation against alcoholism; meat inspection and the control of the sale of milk.

The measures outlined for gradual execution include: the establishment of "preventoriums"; the erection of sanitariums; agricultural and vacation schools; improved conditions of dwelling houses and legislation to further the construction of sanitary dwellings at reasonable rents for the working classes; and legislation for improved hygienic conditions in the cities and districts of the province.

In conclusion, the Commission submits the following recommendations concerning the part which the government should take in the campaign:

1. That explicit instructions be given to the provincial board of health, to municipalities and other authorities, to apply strictly the regulations concerning the obligatory notification of tuberculosis, the disinfection of contaminated dwellings, the keeping of dwellings, and also schools and industrial establishments, in a proper sanitary condition; and that the authorities should receive the active coöperation of

the law officers when they are obliged to put the regulations into execution.

2. That the provincial board of health be the central authority for the direction and application of measures in the fight against tuberculosis, and for this end an appropriation should be voted sufficient to create a special tuberculosis department with a necessary staff. This department should be directed by a medical man of admitted competence in this matter, who will apply all the educational means mentioned in the report, inspect the anti-tuberculosis institutes, and try to organize others to complete the anti-tuberculosis armament, compile statistics, and present an annual report on his administration and the results of the anti-tuberculosis campaign.

3. That in each municipality, or association of municipalities, where there is an anti-tuberculosis society established by charter, the government, on the favourable report of the provincial board of health, contribute by a proportionate sum, to be fixed, to the cost and upkeep of any dispensary, and give the power to municipalities served by this dispensary to contribute to its construction and upkeep.

4. That the government contribute in a proportion, to be fixed, to the establishment of isolation hospitals, or to the construction of special pavilions in the existing hospitals for receiving patients in poverty, and give to municipalities served by these hospitals, or isolation pavilions, the power to contribute to their erection and upkeep.

5. That the government contribute a certain sum, to be determined, to the keep of poor patients in an advanced stage in the hospitals or special pavilions, by distributing this sum at *pro rata* per head, and by week, and give to the municipalities the power to contribute equally in the same way, and for the same end.

6. That the government take the necessary measures to assure the medical inspection of schools, the inspectors reporting not only to their municipalities, but also to the

provincial board of health, on the health of scholars, the cubic space accorded to each, the ventilation and sanitary state of schools; and, moreover, that the provincial board of health be provided with power to inspect all the schools of the province, and to impose such changes as it deems necessary to render the schools healthy.

7. That the government name duly qualified inspectors to report on the sanitary state of all industrial establishments where collective work is done, such as industry, commerce, and administration, and that the existing legislation, completed if necessary, be applied to assure the cleanliness of the establishments where work is done collectively.

8. That the government pass legislation to protect children from premature work.

9. That the government make an investigation as to the hours of work per day in the divers industries of the province, so as to determine if in any industries the hours of labour are excessive and to remedy the same by suitable legislation.

10. That the government name a provincial veterinary surgeon attached to the Department of Agriculture, who shall be the official advisor of municipal inspectors and of farmers who are interested in the milk industry, to distribute tuberculine and to control its use, and to carry out a campaign of education against bovine tuberculosis.

COCAINE IN QUEBEC

NEW evils require new remedies, and the legislature of Quebec has applied a drastic one to the abuse of cocaine. This drug is extremely cheap. It is quoted at a little over two cents a grain in tablet form, and in bulk it could doubtless be procured at a much lower rate. It is so much cheaper and more readily portable than alcohol, that it should be subject to some supervision at least. Probably the use of

the drug as a means of intoxication is not widespread, and the discovery that a few degenerate creatures in the lower levels of city life employ it to alleviate their sense of misery, has given to it a fictitious importance.

The new regulation provides that the drug cannot be sold in any form without a physician's prescription. The dealers are in entire agreement that this is a wise measure, although one member of a deputation of wholesale druggists went so far as to suggest that the importation, sale, and use should be entirely prohibited. Under a strict interpretation of the rule the sale of nostrums containing cocaine would have been prohibited, which in itself would not be a grievous calamity. The manufacturers offered an amendment which would permit of the sale of preparations which contain a minimum of any given drug. In the case of morphine it was placed at one-third of a grain to the ounce. It was discovered, however, that these were matters with which the Dominion legislature alone could deal, and exemption was allowed to all proprietary preparations duly licensed and registered under the Inland Revenue Act.

There is yet a curious anomaly remaining. The law proposes that morphine can only be bought by, or sold to, a wholesale dealer, a retail druggist, a practising physician, a veterinary surgeon, or a dentist. It was suggested, unsuccessfully, however, that to this list should be added hospitals and dispensaries, convents, and institutions maintaining dispensaries. When this Act is passed it will be found that these institutions cannot buy morphine, nor can they have it in their possession. Unless they employ "practising licensed druggists," their prescriptions will have to be sent to a retail drug store to be filled. Further representations are being made to the government and it is hoped that the desired change in the text may be made.

THE SITUATION IN ONTARIO

THE medical situation in Ontario is interesting at the moment, and it is evident that the time for a careful revision of the whole question of standards and authority must receive the attention of the government. The "University Medical Bill" has called for no end of comment, and has aroused the many opponents of the university to action, so that it seems probable that no legislation will be enacted this session. The most vulnerable clause in the Bill is that asking for increased university representation in the council. Undoubtedly this request is unwise in view of the state of public feeling, and the situation is rendered more interesting by the fact that the osteopaths are pressing warmly for recognition, and are encouraged by undoubted sympathy in quarters not far removed from governmental circles. The members of the medical council received a sharp rebuff from Premier Whitney, who has at least the courage of his convictions, whether right or wrong, when they attempted to force the situation by calling on him without an appointment, and it is felt that they may at least wake up to the fact that they must reform. In the University of Toronto the cry is "fight for the absolute right to register our graduates;" outside of that circle there is evidently a desire to compromise, and several excellent suggestions are made. One is that univerversity examinations in primary subjects be accepted by the council and its power to conduct final examinations be retained. Another is that council examinations be done away with altogether and assessors appointed. Be that as it may, the general feeling is that something must be done, first to relieve the student of the enormous fee gathered by the council; second to get rid of the dual examination. If Queen's University and Toronto would stand shoulder to shoulder, they could force the whole situation and put medical education on a high plane. Unfortunately, Queen's is unnecessarily suspicious of anything emanating from Toronto,

XUM

whether in arts, medicine, or science. Constant rivalry makes the Queen's people unduly sensitive to criticism. They realize that they have done good work, under great strain, but when their financial situation is relieved they will be more disposed to co-operate. Queen's has done a great work and undoubtedly is entitled to provincial aid. The Western University, which many assert is not a university except in name, is evidently alive to the fact that the Carnegie Report disclosures cannot be ignored, and is showing more evidence of life and vigour than ever before. It is a disturbing factor in the present situation though, and one which possibly hinders progressive legislation, that London has a strong representative in the Cabinet and no politician would venture to ignore its claims for recognition. The whole question of medical education should be revised by a properly constituted commission which would certainly arrive at a proper solution of the difficulties existing. No doubt Dominion Registration will make things easier, by helping to remove that spirit of provincialism which has hitherto complicated every medical situation in Canada.

A large attendance is expected at the forty-fourth annual meeting of the Canadian Medical Association, which will be held in Montreal on the 7th, 8th, and 9th of June. The programme promises to be attractive. Sir James Barr, of Liverpool, one of the ablest and best known of the physicians of the north of England, is coming to deliver the address in medicine. The address in surgery will be delivered by Dr. Primrose, of Toronto. Dr. W. J. Mayo, of Rochester, will be present, and will read a paper on "Gall Stone Disease," with a view to urging early operation. No surgeons in America have had such a large experience in gall stone surgery as the Mayos. They are entitled to speak with authority, and Dr. Mayo will certainly present his views in a clear and attractive form. A number of interesting papers have been

promised for different sections. Dr. Casey A. Wood, of Chicago, will read a paper before the ophthalmological section. An opportunity will be afforded the members to visit Macdonald College, which is one of the newest, largest, and most completely equipped of the agricultural colleges of the world. It is expected that a provisional programme will be issued shortly. Negotiations are now under way regarding rates of transportation, and the result will be published next month.

THE Canadian Defence League, which is a non-political organization to urge the importance to Canada of universal, physical, and naval, or military, training, has been formed, with offices at 219 St. James Chambers, Toronto. Lt.-Col. J. T. Fotheringham, M.D., is one of the members of the organizing committee. The objects of the League are: to awaken the public mind to the serious importance of national defence; and to aid in bringing about the adoption of the most effective and economical system; to carry on a non-political, educational campaign looking to the adoption of the principle of patriotic, unpaid, universal, naval or military training, in the belief that such training conduces to the industrial, physical, and moral elevation of the whole people, and is essential to national safety; to co-operate with the various provincial educational authorities, the Department of Militia and Defence, and the trustees of the Strathcona Fund, in introducing physical and military training into all schools in Canada; and to aid in securing the systematic physical and military training of all youths between the ages of fourteen and eighteen.

THE "Roddick Bill," which provides for one registration and establishes a Dominion Council, upon whose license physicians may practise in any province, passed a special committee of the House of Commons on March 3rd. Provision is made for representation on the council from universities, and by reason of this provision objections were urged by Saskatchewan, Alberta, and British Columbia, on the ground

XUM

that they have no universities. By way of compromise, it will be provided that of the three members of the council appointed by the government, two shall be from these provinces. With this exception the Bill will be reported as it stood in the abstract published in the JOURNAL in February. The congratulations and thanks of the profession will go out to Dr. Roddick for his unceasing labour in this cause during the past nine years.

IN accordance with instructions received at the annual meeting of the Canadian Medical Association, the treasurer is now drawing upon the members for the annual fee; and some are evidently disturbed at the imposition of the cost of collection. The annual fee includes not only the cost of the JOURNAL, but the membership fee for the Association, and also the membership fee for the provincial association, where such has been formed. During the first year many initial expenses have occurred, which has necessitated the husbanding of the resources; and for this reason the treasurer is drawing upon the members, adding the bank charges. To each member this is a small amount; but to the Association a substantial sum. Should members prefer they can always send the annual fee direct to the treasurer.

THE draft of a bill which has been prepared on behalf of the board of governors of the University of Toronto, has been placed in the hands of the medical members of the Ontario legislature. The purpose of the bill is to abolish the examinations that the medical graduates of the university have been compelled to take before the council. The bill is now before the provincial cabinet, but will not be taken up by the government until the views of the medical council, Queen's, and the Western universities, and the doctors of the province, have been heard. The final clause provides that any other university may secure the same privilege if the council declares that its standard is equal to that of Toronto University.

Book Reviews

MODERN TREATMENT. Edited by HOBART AMORY HARE, M.D., assisted by H. R. M. LANDIS, M.D., in two volumes. Vol. II., illustrated. Lea and Febiger, Philadelphia and New York.

To this volume there are twenty-one contributors, of whom nineteen are American, one French, and one "English." But that English author is James Mackenzie, and he is quite competent by himself to speak for English medicine, especially that part which is concerned with the heart and its treatment. It is not too much to say that Dr. Mackenzie has revolutionized the treatment of heart disease, and the record of his achievement is one of the most interesting in the history of English medicine. For the first time the subject received scientific treatment at his hands, and it is now recognized, even in Germany, that the prevailing opinions upon the value of the traditional method of treating cases of heart disease were hard to distinguish from superstition. In fifty-six pages of this book Dr. Mackenzie has said more of value than ever was said before, except by himself, upon this important subject. The book contains 900 pages, and is divided into ten parts. It confirms the impression that physicians are regaining the old belief that their real business in the world is treatment, and that they are giving more attention to it than at any previous time.

PRACTICAL TREATMENT. Volume I. A HANDBOOK OF PRACTICAL TREATMENT. In three volumes. By seventy-nine eminent specialists. Edited by JOHN H. MUSSER, M.D., Professor of Clinical Medicine, University of Pennsylvania; and A. O. J. KELLY, M.D., Assistant Professor of Medicine, University of Pennsylvania. Octavo of 909 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1911. Per volume: cloth, $6.00 net, half morocco, $7.50 net. Canadian agents, The J. F. Hartz Company, Limited, Toronto.

This volume, which has long been expected, and unavoidably delayed, was received on February 8th, and we hasten to call attention to it. The publication of the first volume of a work upon treatment by "seventy-nine eminent specialists" is an event of no small importance in American medicine. Amongst these specialists we note the names of four Canadians, three of whom are resident in the United States.

XUM

To the first volume there are twenty-two contributors, one of whom is a Canadian, one from London, and the remainder from the United States, ten of these being resident in Philadelphia. Of the 909 pages which make up the first volume, 115 have been assigned to Dr. R. Tait McKenzie, formerly of McGill University, but now director of physical education in the University of Pennsylvania. In this compass Dr. McKenzie makes the best and most complete presentation of treatment by exercise, massage, and other mechanical methods, which exists outside of his own book upon the same subject, namely, "Exercise in Education and Medicine," published also by Messrs. Saunders. A large part of this volume is devoted to a consideration of general principles, such as those underlying dietetics, serum therapy, organotherapy, and psychotherapy; but there are sections dealing with treatment by rest, work, baths, climate, electricity, and radium. When this work is completed it will likely be accepted as a standard of the best that is known at the moment of the treatment of disease. The editors, Drs. Musser and Kelly, have performed their duty towards the publisher and the profession with rare ability.

MEDICAL DIAGNOSIS. By W. MITCHELL STEVENS, M.D., M.R.C.P., Fellow of University College, London. 1,571 pages, 177 illustrations. H. K. Lewis, London. Price, 25 shillings, net.

Only those who have written books will appreciate the labour involved in this attempt to set forth all the considerations by which one disease is distinguished from another; and we can well believe that the author was "engaged for several years" upon it, as he states in his too modest preface. It is a workmanlike book, and every device is employed to secure clear presentation of an enormous amount of detail. The illustrations are fresh, and the various tables are made with remarkable completeness. The synopsis of nerve-distribution attributed to Professor Evatt, of Winnipeg, is a remarkable piece of work. The book is a library in itself.

MANUAL OF MEDICINE. By THOMAS KIRKPATRICK MONRO, M.A., M.D., Physician to the Glasgow Royal Infirmary. Third Edition, 1911. London, Bailliére, Tindall and Cox, 1,023 pages, 42 illustrations. Price, 15 shillings, net.

This manual contains a fair presentation of modern medicine in a form suitable for an advanced student or general practitioner, who desires definite teaching which can be readily reached. The record is accurate and comprehensive.

Books Received

The following books have been received, and the courtesy of the publishers in sending them is acknowledged. Reviews will be made from time to time of books selected from this list.

THE PRACTICAL MEDICINE SERIES: comprising ten volumes on the progress in medicine and surgery during 1910. Edited by Gustavus S. Head, M.D., Professor of Laryngology and Rhinology, Chicago Post-graduate Medical School, and Charles L. Mix, A.M., M.D., Professor of Physical Diagnosis in the Northwestern University Medical School. Price per volume, $1.25, $1.50, and $2.00; series of ten volumes, $10.00. Chicago: The Year Book Publishers, 40 Dearborn St. Vol. 1, General Medicine; Vol. 2, General Surgery; Vol. 3, The Eye, Ear, Nose, and Throat; Vol. 4, Gynæcology; Vol. 5, Obstetrics; Vol. 6, General Medicine; Vol. 7, Orthopædic Surgery; Vol. 8, Materia Medica and Therapeutics; Preventive Medicine, Climatology; Vol. 9, Skin and Venereal Diseases, Miscellaneous Topics; Vol. 10, Nervous and Mental Diseases.

AIDS TO PATHOLOGY. By Harry Campbell, M.D., B.S., Lond., F.R.C.P. Second Edition. Pp. 228. Cloth, 3s. 6d., paper, 3s. net. London: Baillière, Tindall & Cox, 8, Henrietta St., Covent Garden, 1911.

MANUAL OF CLINICAL PATHOLOGY. By Richard Weiss, M.A., Ph.D., F.C.S., in collaboration with George Herschell, M.D., London, and Andrew Charles, F.R.C.S., Dublin. Pp. 72. 2s. net. London: J. and A. Churchill, 7, Great Marlborough St., 1910.

UN NOUVEAU TRAITEMENT DU TABES (ATOXIE LOCOMOTRICE). By Dr. Helan Jaworski of the Faculty of Medicine of Paris. 3 fr. 50. Pp. 215. Paris: A. Malone, 25-27, rue de l'Ecole de Médecine, 1910.

INTERNAL SECRETIONS FROM A PHYSIOLOGICAL AND THERAPEUTIC STANDPOINT. By Isaac Ott, A.M., M.D., Professor of Physiology in the Medico-Chirurgical College of Philadelphia. Pp. 133. $1.00. E. D. Vogel, Easton, Pa., 1910.

A HANDBOOK OF INTESTINAL SURGERY. By Leonard A. Bidwell, F.R.C.S. Second Edition; pp. 215; illustrations, 120; 6s. net. London: Baillière, Tindall and Cox, 8, Henrietta St., Covent Garden, 1910.

XUM

Res Judicatæ

Arbeit aus dem Gebiet der Knochen-pathologie und Knochen-chirurgie.—Axhausen.

RAPID strides are being made in what might be called constructive surgery. The advances in the surgery of the blood-vessels and of bones and joints are conspicuous examples. The names of Lexer and Axhausen are intimately associated with surgery of the joints. About two years ago Axhausen published a most interesting piece of work on the transplantation of bone in "*Archiv fur Klinische Chirurgie*," and now, in the same journal (Band 94, Heft 2), he supplements his previous work. The free transplantation of bone and other tissues is full of interest to the scientist and to the scientific surgeon, and all must agree with Barth who remarked that the day of osteoplastic work is just beginning.

Axhausen reports the case of a young woman twenty-three years of age, in whom Hildebrand replaced the upper end of the femur by a piece of the fibula. When the patient was three years of age she fell from a low stool and sustained a fracture of the upper end of the right femur. She was treated by splints and extension, and the union seemed to be quite satisfactory. Gradually, however, there developed a curvature of the upper third of the femur. The cause seemed to be a softening of the bone, and finally a cyst formed and was removed, and the bone was straightened. The following year shortening of the limb began to appear and a swelling in the neighbourhood of the joint was observed. The swelling proved to be a fibroma. Hildebrand removed the upper end of the shaft of the bone, the neck, and head. He then took a portion of the fibula, covered as far as possible with periosteum, from the same leg, and used it to fill the gap. One end was driven into the medullary canal of the femur, and the other end placed within the acetabulum. The wound was closed in layers without drainage, and primary union followed. One year and ten months later she was free from pain. There was 18 cm. of shortening. With her splint she could walk long distances, and without any splint or aid except her high boot, she could walk very well, although after a time she felt fatigue in the foot and calf of the leg. The transplanted portion of fibula gradually became larger, thicker, and stronger. The last radiogram shows it to be only a little smaller than the femur and to have become very compact. A false

joint formed about the upper border of the acetabulum. The patient has 60° of flexion, 20° of abduction, and 15° of adduction, and feels herself that the joint is strong and safe. How much better such a condition than going about for life on crutches and without a leg!

Axhausen has contributed very largely to our knowledge of the changes that take place in the transplanted bone. On many points our views have been materially altered as a result of experience derived from experimental surgery. On some questions there is yet some difference of opinion. It is found that the best results are obtained from live periosteum-covered bone taken from the same person or animal.

Radiograms in the above cases show very little change for some time. That taken a year and five months after operation shows clearly an enlargement of the transplanted bone, but not to a very great degree. A radiogram taken five months later shows greater changes. The enlargement during that period had been much more rapid than before, and, as the author suggests, may still go on. The delay in the early period and the rapid advancement later on, are probably due to several causes, the first and very obvious one being that the transplanted bone dies and must be absorbed or substituted by new bone. The fibula, being dense and compact, is changed slowly. The periosteum covering the transplanted bone possesses in a high degree the power of survival and of forming new bone, but it is injured, more or less, during the removal of the bone, and has attached to it some muscle and other tissue which may impair its power for a time. The bone marrow which has bone-forming powers is also largely lost, and there may be other factors which will appear on further study.

Lexer has successfully transplanted portions of joints and, in a few instances, whole joints. One young woman in Königsburg is now walking on a transplanted knee joint obtained from a leg amputated from another patient for senile gangrene. The field is very attractive and gives promise of great possibilities and usefulness in conservative, constructive surgery.

XUM

Retrospect of Surgery

L'ANASTOMOSE ARTERIO-VEINEUSE

CH. MONOD et J. VANVERTS, *Archives Générales de Chirurgie*, April and May, 1910.

WITHIN the past few years the surgery of the vascular system has received a large share of attention both from laboratory workers and clinicians, and, in a general way, it may be said that results have been obtained which a decade ago would have been thought quite incredible. Nevertheless, in this, as in most other branches of surgery which have been elaborated by experimental work, the results obtained with animals have, in the earlier stages, been far in advance of those got in work on the human. On the one hand, things may be tried in the laboratory which would never be admissible in the surgical theatre, and on the other hand, success may attend operations upon the healthy tissue of animals which would be quite unhoped for in human tissues rendered unhealthy by the disease or injury for which operation is undertaken. Thus it happens that while we stand amazed at the extraordinary surgical feats of a Carrell or a Stich, who, for instance, transplant the kidneys of one dog into another dog previously nephrectomized, or who attach the left ventricle of the heart to the descending, thoracic aorta, we must call a halt when it comes to operating upon the patient with advanced Bright's disease, or with aneurism of the arch of the aorta.

In certain directions, however, the work of the laboratory men has been of signal advantage to the practical surgeons. They have shown, above all, that by means of a special technique and by dint of giving extraordinary care to the details of absolute asepsis, it is possible, in a majority of instances, to unite severed blood-vessels, escape formation of an obliterating thrombus, and so secure the reëstablishment of the blood current. As one practical result of this work, it may now be counted a surgical error to ligate any large artery for an aseptic wound of such artery.

The purpose, however, of the present review, is to set forth the results obtained in one particular branch of vessel surgery; namely, that which concerns anastomosis of artery and vein. This is very thoroughly done by Monod and Vanverts in the research indicated above. Arterio-venous anastomosis may be carried out for various

purposes; as, for instance, in cases of obstruction of a large artery with anæmia of the parts situated below the obstruction. Again, it may be necessary to reëstablish the continuity of an important artery, of which a portion has been resected or destroyed; in which case a segment of vein is interposed between the two ends of the artery. Finally, it may be carried out in the operation of direct transfusion of blood from one individual to another. Of these practical applications of the operation, the first only is here considered. Several questions immediately present themselves: (1) Is such an anastomosis possible? (2) The communication being once established, can the blood follow the retrograde course in the veins? (3) What experimental and clinical results have been hitherto obtained by the method of arterio-venous anastomosis? (4) Does the operation carry with it any special danger?

In answer to the first question, the authors, after a critical study of the published cases, twenty-six in number, conclude that such an anastomosis, with preservation of the flow of blood, is certainly possible, but that thrombosis frequently develops; and that this thrombosis is, in the majority of cases, caused by a slight infection, although frequently the arterio-sclerotic condition of the vessels concerned must also be taken into account. Nevertheless, the percentage of successes has steadily increased *pari passu* with improvements in technique.

The second question is one which, at first sight, it would seem necessary to answer in the negative. In fact, one would be much inclined to expect that the valves of the veins would offer an insuperable obstacle to the backward course of the arterial blood. It has been fairly well proved, however, by the researches of Carrell and Guthrie, of Morel, Tuffier, Frouin, and of Cottard and Villandre, that the valves are ultimately forced by the arterial blood pressure. Carrell and Guthrie (*Annals of Surgery*, 1906, vol. 43, page 203) demonstrated that the valves at first resisted the centrifugal circulation in the veins, but later gave way; and that the blood thereupon reached the capillaries, where it took on the colour of venous blood, and then arrived in the arteries; finally, that in the dog the establishment of this reversed circulation was complete in the lower limb at the end of three hours. Hitherto there is only recorded one case on the clinical side which would go to prove the possibility of this reversal of the circulation. Hubbard of Boston, in a man seventy-seven years of age, afflicted with senile gangrene of the foot, anastomosed the femoral artery to the femoral vein in Scarpa's triangle. Distinct improvement followed; but, on account of the recurrence of pain, and the development of œdema, amputation in the lower third of the thigh became necessary; and, during the amputation, red blood was observed to flow from the femoral

XUM

vein. Monod and Vanverts object to this apparently demonstrative observation, remarking that, the amputation being done at a comparatively short distance from the anastomosis, it is impossible to conclude that arterial blood was circulating through the veins in the leg or in the foot; consequently, the complete reversal of the circulation remained unproved. A clinical observation, however, of some value in this question, is that in four cases out of twenty-six, the tissues of the limb below the seat of anastomosis became warmer and congested after the operation. This would reasonably indicate the circulation of a certain amount of arterial blood through the vein as far as the periphery. In five, the authors conclude that while the possibility of a reversal of the circulation would seem to be established experimentally, the clinical results hitherto reported represent no more than a probability in favour of the hypothesis.

What are the results obtained in man by arterio-venous anastomosis? In answer to this question, the authors review thoroughly all the recorded cases. It is evident, of course, that the principle of the operation is to provide arterial blood for tissues which are threatened with gangrene, or which are actually gangrenous as the result of obliteration of the arterial path by embolism, or by atheroma, or by obliterating endarteritis. The results which the writers found in their study of the literature may be summarily quoted. They are divisible into two classes:

(a) In those in which gangrene is already established. Here it may be premised that the majority of the cases concern senile gangrene of the foot. Of thirteen cases, only three were in patients below the age of sixty. In these thirteen cases there occurred temporary improvement in seven; in five there was complete failure; and in two there was apparent success. In one of these, Mr. Ballance's case, such a good result was obtained that one might almost assume that the circulation had been successfully reversed. In a few it was possible to examine later the anastomosis. While in most of these thrombosis was demonstrated, it was found in two that the anastomosis had remained patent, but in one of these two, nevertheless, the operation had not succeeded in arresting the gangrene.

(b) Cases of threatened or beginning gangrene. In these, in number, nine, there was a greater percentage of successes. In marked contrast to the first class, the majority of the patients were under sixty years of age, only three being over that figure; and of these three, two were complete failures, and the third only a temporary success. This was Hubbard's case previously referred to. The other cases were instances of wounds of arteries, or of obliterating endarteritis. Of

the total of nine cases, five could be set down as failures, and four as successes. Of the five failures, there occurred temporary improvement in three; in only two was the failure complete from the first.

Is the operation a dangerous one? In the twenty-six observations collected by the authors, death was noted in twelve; but in nearly all of these, the fatal result could not, with justice, be set to the credit of the operation. One died of syncope on the twenty-sixth day; another, of erysipelas on the tenth day; another, of intestinal gangrene five months after the operation. Most often death was due to the progress of the gangrene in spite of the operation, or to the cachectic state in which the patients were found before operation. In fourteen cases it was necessary to amputate some time after the anastomosis operation; and of these, four died. In two of the four it seems to have been the operation which caused death; and in the two others it was evident that the patients were not in a condition to withstand the second operation. In two cases death was due to cerebral and pulmonary embolism. The authors conclude that the operation in itself does not expose the patient to the danger of embolism more than does any other operation upon veins; nevertheless, that the conditions under which the operation is done give to it in this respect a greater seriousness, partly because of the atheromatous condition of the vessels so frequently found, and partly because of the infection which is often already present in the areas of gangrene.

In conclusion, it is evident from the study of this very careful review of the literature, that the operation of arterio-venous anastomosis for senile gangrene of the foot is one which can rarely be justified. In younger people, where there is reason to expect that the vessels are not atheromatous, as, for instance, in some cases of presenile obliterating endarteritis, or in embolism of a large trunk, and in wounds of an artery with considerable loss of substance, the operation may be considered to be quite justifiable. Moreover, the presence of established gangrene of any extent renders the outlook for the success of the operation extremely doubtful; while in cases of merely threatened gangrene, the outlook is much better.

XUM

Army Medical Service

CANADIAN ARMY MEDICAL SERVICE

THE annual meeting of the Association of Medical Officers of the Militia was held at Ottawa on February 23rd and 24th.

Thursday morning was devoted to business and the consideration of various questions of interest to the medical service. It is one of the occasions where officers can register "kicks" against existing regulations and can suggest ways and means to overcome difficulties. In the afternoon a lengthy paper was read by Colonel Jones, D.G.M.S., on the medical arrangements at the battle of Mukden, March, 1905. This was illustrated by elaborate diagrams showing the tactical distribution of the various medical units during that protracted battle. Major-General MacKenzie, chief of the general staff, read a most interesting paper on the question of marching and the responsibility of the medical officer concerning the same. Lieut.-Colonel Echlin, Ottawa, then showed a case of injury from an explosion of a pom-pom shell and subsequent recovery in a man seventy-two years old. On Thursday evening the association dined at the Ottawa golf club, the president, Lt.-Colonel Rennie, in the chair. Speeches were made by Major-General MacKenzie, Major Louis Seaman, United States Volunteers, and others.

Friday morning was devoted to a "war game," the medical forces being represented by officers from Toronto and officers from Montreal. Lieut.-Colonel K. Cameron was the A.M.O. of the red force, and Lt.-Colonel Fotheringham, of the brown. The engagement took place at Brockville, and the members followed the handling of the medical service with great interest. The afternoon was devoted to the reading of papers by Captain R. B. Campbell, on "606," and Major Drum on "A Proposed Military Medical College." In the evening Major Louis A. Seaman, U.S.V., gave a public lecture on his recent travels in East Africa.

THE following officers were elected: honorary president, Sir Frederick Borden, Minister of Militia; honorary vice-presidents, Col. E. Fiset, D.S.O., Deputy Minister of Militia, and Col. G. C. Jones, D.G.M.S.; president, Major E. A. LeBel, Quebec; vice-presidents (one for each military district), Major D. B. Bentley, Lt.-Col. Fotheringham, Major A. R. B. Williamson, Major J. W. Shillington, Major

E. R. Brown, 5th R.H.; Lt.-Col. R. T. MacDonald; Capt. W. L. M. Carter, 8th R.R.; Major T. D. Walker, Major J. Ross, Major W. Webster, Major F. C. McTavish, Major D. McLauchtan, Captain L. S. Mackid; secretary, Captain T. H. Leggett, Ottawa; assistant secretary, Lieut. N. MacLead, Ottawa; treasurer, Captain McKelvey Bell, Ottawa.

The executive committee is composed of one officer from each military district. They are: Lt.-Col. R. I. Lockhart, Lt.-Col. F. Fenton, Major F. Etherington, Major C. A. Hodgetts, Major C. F. Wylde, Major M. Lauterman, 6th Hussars; Major G. G. Turcot, Captain T. E. Bishop, Lt.-Col. J. A. Sponagle, Major W. L. Watt; Captain A. M. Robertson, 6th Regiment Artillery; Lt.-Col. S. R. Jenkins, 4th Regiment Artillery; Captain J. A. Hislop, 19th Alberta Mounted Rifles.

The next meeting will be held February 27th and 28th, 1912.

Personal

Dr. W. W. Ogden, for forty-five years a member of the Toronto School Board of Trustees, has resigned. A resolution of regret was passed at his retirement.

Dr. L. de L. Harwood has been added to the faculty of medicine of Laval University in place of the late Professor Lamarche.

Dr. B. C. Crowell has left for Manila, where he has been appointed to the position of pathologist and bacteriologist to the Bureau of Science, which is under the direction of the United States War Department. Dr. Crowell is a native of Yarmouth and a graduate in arts and medicine. After graduating he went to New York and has been engaged in special demonstration work at the Bellevue Hospital.

Dr. E. G. Kidd has been appointed to succeed Dr. Etherington as head of the anatomical department of the medical faculty of Queen's University. Dr. Kidd is a graduate of Queen's and house surgeon of the Kingston General Hospital.

XUM

News

REPORTS FROM THE HOSPITALS

THE following is a condensed report of the Mountain Sanitarium, Hamilton, for the year 1910: patients in residence October 1st, 1910, forty-two; patients admitted during year, 114; patients under treatment during year, 156; discharged during year, 112; deaths, four; in residence September 30th, 1910, forty; collective stay of patients, 15,503 days; average stay of patients, 99·3 days; average number of patients in residence, forty-two; residence of patients: Hamilton, 135; Dundas, eight; East Flamboro', three; West Flamboro', two; Barton, three; Ontario, five; total, 156; nationalities of patients: Canadian, ninety-nine; English, thirty-two; Irish, four; Scotch, seven; United States, five; other countries, nine; religion of patients: Protestants, 116; Roman Catholics, thirty-two; other denominations, six; ages of patients: under nine years, seven; ten to fourteen, eighteen; fifteen to nineteen, thirty-four; twenty to twenty-four, twenty-five; twenty-five to twenty-nine, twenty-eight; thirty to thirty-four, eight; thirty-five to thirty-nine, fifteen; forty to forty-four, ten; forty-five to forty-nine, nine; fifty to fifty-four, one; fifty-five to fifty-nine, one. Of the 112 cases discharged during the year, seven neither gained nor lost in weight; twenty-six lost an average of 6·3 pounds; seventy-nine gained an average of 7·8 pounds. The largest individual gain was twenty-six and a half pounds. Of the ninety-six cases reported upon during the year the results were: incipient, six cured, three arrested, ten much improved, one no change; moderately advanced, five cured, eleven arrested, seventeen much improved, six no change, four failed, one died; far advanced, ten much improved, seven no change, ten failed, four died; doubtful case, one much improved. The number of patients under treatment since the establishment of the sanatarium is: first year, thirty; second year, seventy-one; third year, ninety-four; fourth year, 101; fifth year, 116; total, 412.

THE twenty-first annual report of the Protestant Hospital for the Insane, at Verdun, near Montreal, issued by Dr. Burgess, medical superintendent, gives a complete history of the hospital since its inception. This hospital occupies a singular position among institutions which do similar work in Canada, being by statute able to admit only Protestants as public patients, i.e., patients supported by the government and

municipality from which they come. The institution is not proprietary, inasmuch as any profits accruing must, by the terms of its charter, be used for the benefit of the hospital and its patients. At the same time, by reason of the inadequate sum hitherto paid per annum for each patient, the institution is dependent in a measure upon private charity for its successful, financial administration. Early in the past year, however, a more favourable contract was consummated with the provincial government by which the former yearly sum per caput for maintenance, $116, has been increased to $142. During 1910, the admissions numbered 215, while the total number under treatment for the twelvemonth was 828. The daily average number in residence was 624. The total discharge rate of admissions was 60·93 per cent., and the recovery rate, 40·66 per cent. The average length of residence for those discharged was a trifle over one year. Sixty-one deaths occurred, which gives a percentage of 7·36 of the number under treatment. The chief causes of death were, in order named: senility, ten; general paresis, nine; tuberculosis, eight; and cardiac disorders, six; the remainder being due to a variety of causes. A recent offer from a friend to defray one-half the cost of a new amusement hall and a nurses' home has caused the board of management to issue an appeal to the general public to subscribe the other half, $65,000, and they hope that a ready and liberal response will be made to this solicitation which means so much to the inmates and those engaged in their care.

THE annual report of the General Hospital, Montreal, shows that during 1910, 3,586 patients were treated to conclusion, an increase of 284 over the previous year. There were 272 deaths in the institution, while 3,314 patients were discharged. The average number of patients per day was 205. The average number of days in the hospital per patient was 20·8, while the aggregate number of days by all patients was 75,026, an increase of sixty-six days over the previous year. The indoor patients treated to conclusion were divided as follows: 2,301 males and 1,285 females. There were 2,243 non-paying patients and 649 public paying patients. Private patients numbered 440, and semi-private 254. By religions, the patients treated were: Protestants, 1,815; Catholics, 1,349; Hebrews, 363; other religions, 59; 2,793 patients were citizens of Montreal, and 528 from outside places. By nationalities: from Canada, 1,898; Great Britain, 916; United States, 167; Russia, 208; Italy, 106; and 269 from other countries. In the outdoor department the total number of patients treated was 13,588. Consultations reached 59,683, an increase of 8,704 over the year previous. During the year, eighteen nurses graduated from the hospital, making the total number of graduates 358 since the hospital's inception.

XUM

The annual meeting of the directors of Notre Dame Hospital, Montreal, was held February 22nd. The treasurer's report showed the revenue of the Notre Dame and St. Paul Hospitals to have been, for the year ending December 31st, 1910, $83,297, while the expenditure for the same institutions amounted to $106,300. Of this amount $14,060 belonged to the construction account of the new hospital on Sherbrooke Street east. The deficit is, therefore, $3,809, against a surplus of $7,377 for the previous year. The report also showed that of the $208,000 collected a few months ago, $175,896 had gone towards paying off the debt on the old building, and the balance in placing the hospital in a state of repair that will enable the management to carry on the hospital work as at present until plans are matured for raising the required $300,000 for the new hospital. It was announced that Mr. Rodolphe Forget had given a further donation of $100,000 to the hospital to wipe out the mortgage of $100,000 held by the Commercial Union Assurance Company. This brings the total of Mr. Forget's contributions up to about a quarter of a million dollars. The superintendent's report showed that the number of patients during the year reached 2,016, of whom 1,186 were men, and 830 women. The total days of hospital work were 38,129. Of the patients, 1,404 left the hospital cured, 369 were improved, and 109 were pronounced incurable. There had been 152 deaths during the year, the mortality percentage having been reduced. In the dispensary there were 21,537 consultations, and 1,749 urgency cases looked after by the house surgeon and his assistants. There were four graduates from the school of nurses.

The report of St. Paul's Hospital showed that the institution had taken care of 227 cases of diphtheria, 212 cases of measles, 210 cases of scarlet fever, and thirty-seven cases of erysipelas.

THE Ontario Provincial Board of Health will hold a public health exhibit in connexion with the Canadian National Fair, Toronto, beginning the end of August. In addition to the exhibit, there will be daily fifteen-minute lectures, with lantern demonstrations, upon various subjects relating to public health and prevention of disease.

WITH the object of securing more definite medical and statistical data in respect to the prevalence of anterior polio-myelitis in Canada, the study of which will enable the Public Health Committee of the Commission of Conservation to make some recommendation in respect to this disease, circulars are being sent out to the physicians throughout the country asking for information regarding any case or cases of this

disease which may have occurred in their practice between November 1st, 1909, and October 31st, 1910.

In regard to the typhoid epidemic in Hull and Ottawa, Mr. Jas. O. Meadows, sanitary engineer, in his report to the president and members of the provincial board of health of Quebec, says that from the result of his examinations he has come to the conclusion that the outbreak of typhoid fever in Ottawa was caused by the infectious material from the Hintonburg and Mechanicsville district entering into the Ottawa water.

The system of medical inspection outlined for the Toronto public schools by the sub-committee of the Board of Education has been approved of by the Toronto school board, and Dr. W. E. Struthers has been appointed chief medical inspector. The estimated cost of the system is as follows: chief medical inspector, per annum, $2,500; eight assistant medical inspectors, at $800 per annum each, $6,400; one superintendent of nurses, $1,800; seventeen school nurses, at $600 per annum each, $10,200; one clerk, $600; supplies, $300; miscellaneous, $500; dental inspection, $1,200; total, $23,500.

ONTARIO MEDICAL ASSOCIATION

The thirtieth annual meeting of the Ontario Medical Association will be held at the Clifton Hotel, Niagara Falls, May 30th, 31st, and June 1st. The following is the provisional programme:

Tuesday, May 30th—Morning Session. Registration of members at secretary's desk, Clifton Hotel (River Road entrance). 2 p.m.—General Session. Reading of minutes; communications; president's address. Appointment of committee on nominations and scrutineers. Symposium on Appendicitis: Pathology—N. T. McLaurin, Toronto, (lantern slides). Medical Treatment—R. D. Rudolf, Toronto. Surgical Treatment—H. A. Bruce, Toronto. Address in Medicine—T. B. Futcher, Associate Professor of Medicine, Johns Hopkins, Baltimore.

Evening Session, 8 p.m. The Relation of Laboratories' Work to Medicine—Norman M. Harris, Prof. of Bacteriology, University of Chicago. Public and Professional Aspects of the Pneumonia Question—William Charles White, Medical Director, Tuberculosis League, Pittsburg, Penn. 9 p.m.—Reception in Clifton Hotel ball room tendered to the members of the association by the president, H. R. Casgrain and Mrs. Casgrain.

XUM

Wednesday, May 31st—Morning Session. Surgical Section, 9 a.m. A Paper—Robert Lucy, Guelph. Surgical Diagnosis of Diseases of Kidney and Bladder—J. K. McGregor, Hamilton. Open Method of Treating Fractures, with Lantern Demonstrations—F. N. G. Starr, Toronto. Pancreatitis Clinically Considered—E. Archibald, Montreal. A Paper—A. Primrose, Prof. of Clinical Surgery, Toronto. Thoracic Surgery, with lantern—E. Von Eberts, Montreal. Some Interesting Cases—H. F. MacKendrick, Galt.

Medical Section, 9 a.m.—Results from Immunological Tests of Tuberculosis—A. H. Caulfield, Gravenhurst. The Present Status of Radium Therapy—W. H. B. Aikens, Toronto. Constipation; Its Ætiology—S. H. McCoy, St. Catharines.

Gynæcology, Obstetrics, and Pediatrics Section, 9 a.m. Post Partum Hæmorrhage — Robert Ferguson, London. Non-Surgical Treatment of Tuberculous Adenitis—Campbell Laidlaw, Ottawa. Use of Cold Baths in Treatment of Diseases of Children—James Newell, Watford, Ont. Discussion led by S. McCoy, St. Catharines. Differential Diagnosis of Right Sided Salpingitis and Appendicitis; when to Operate in Salpingitis; when to Operate in Appendicitis—S. M. Hay, Toronto. Diagnosis of Extra-Uterine Pregnancy—James McLeod, Buffalo. Discussion led by Dr. Goldsborough, Buffalo, N.Y.

Section of Preventive Medicine and Military Sanitation, 9 a.m. Municipal Control of Milk Supply—Charles J. Hastings, M.H.O., Toronto. A Paper—John Phillips, Associate Professor of Medicine, Western Reserve University, Cleveland. A Paper—J. Heurner Mullin, Hamilton. A Paper—Major Lorne Drum, P.A.M.C., General Secretary Canadian Public Health Association. Disinfection of Public Water Supplies—J. A. Amyot, Toronto.

Wednesday Afternoon—General Session, 2 p.m. Address— George W. Crile, Cleveland. Surgical Diseases of the Umbilicus—Thomas Cullen, Assistant Professor, Johns Hopkins, Baltimore.

Business Session, 4 p.m. Election of officers and committees. Reports of officers. Reports of committees. Reports of secretary. Resolutions and notices of motion.

Wednesday Evening. Annual dinner, Clifton Hotel banquet hall.

Thursday Morning, June 1st—Surgical Section, 9 a.m. A Paper—H. R. Elliott, Niagara Falls. Two Cases of Phlegmonous Enteritis—L. W. Cockburn, Hamilton. A Paper—G. T. McKeough, Chatham. Fractures—Walter McKeown, Toronto. Abdominal Surgery in the Farm House—Hadley Williams, London. A Paper—Ingersoll Olmstead, Hamilton. A Paper—James H. McGarry, Niagara Falls.

Medical Section, 9 a.m. Early Diagnosis of Pulmonary Tuber-

culosis—F. C. Neal, Peterborough. Aortitis—F. A. Clarkson, Toronto. Serum Treatment of Pneumonia—James H. Duncan, Chatham. Our Results with "606"—R. P. Campbell, Montreal.

Gynæcological Section, 9 a.m. Extra-Uterine Gestation—Wesley Krupp, Woodstock. Infantile Eczema—W. H. Moorehouse, London. A Paper—A. T. Shillington, Ottawa. Typhoid in Child, Complicated by Thrombosis of Femoral Artery, Amputation, Recovery—Henry T. Machell, Toronto. Twisted Pedicle of Ovarian Cyst—E. R. Secord, Brantford. A Paper—Charles Carter, Hamilton. Phlebitis following Pregnancy—J. F. Hanley, Almonte. Discussion opened by Adam Wright and A. T. Shillington.

Eye, Ear, Nose, and Throat Section, 9 a.m. Injuries of Eyeball—T. Woodruff, Chicago. Different Methods of Treatment of Inflammation of Accessory Sinuses of Nose—Lee M. Hurd, New York. A Paper—D. Gibb Wishart, Toronto. Treatment of Tubercular Laryngitis—C. M. Stewart, Toronto. A Paper—G. Sterling Ryerson, Toronto.

Thursday Afternoon, General Session, 2 p.m. Address in Surgery, A. E. Garrow, Assistant Professor of Surgery, McGill University. Anterior Poliomyelitis (a) Medical Diagnosis, Epidemicology—Robert Parry, Hamilton. (b) Surgical Treatment—John Parry, Hamilton. Discussion led by A. Moir, Dunnville.

The complete programme will be sent about May 10th, 1911.

The following are the officers of the Association: president, Dr. H. R. Casgrain, Windsor; 1st vice-president, Dr. H. B. Anderson, Toronto; 2nd vice-president, Dr. T. M. Rogers, Ingersoll; 3rd vice-president, Dr. T. C. Connell, Kingston; 4th vice-president, Dr. T. R. Arthur, Collingwood; general secretary, Dr. F. Arnold Clarkson, 471 College St., Toronto; chairman committee on papers and business, Dr. E. E. King, 61 Queen St. E., Toronto; chairman committee on arrangements, Dr. F. W. E. Wilson, Niagara Falls; local secretary, Dr. Norman Walker, Niagara Falls; treasurer, Dr. J. Heurner Mullin, Hamilton; chairman of sections—surgery, Dr. W. E. Olmsted, Niagara Falls, medicine, Dr. John Sheahan, St. Catharines; obstetrics, gynæcology, and pediatrics, Dr. W. K. Colbeck, Welland; preventive medicine and military sanitation, Dr. E. L. Garner, Welland; ear, eye, nose, and throat, Dr. J. G. Sutherland, St. Catharines.

XUM

Canadian Literature

ORIGINAL COMMUNICATIONS

Le Montréal-Médical, January 15th, 1911:

Myopathie primitive progressive à forme pseudo-hypertrophique . . . . . Professor Hutinel.
Persistance de l'infection des centres nerveux . A. Thiroux.
Les régimes pathologiques . . . . . Professor Le Gendre.

Le Bulletin Médical de Québec, January, 1911:

Contre les traitements systematiques de l'enterite muco-membraneuse et des mucorrhées . . M. Lœper.
La Grippe . . . . . Dr. Le Gendre.

Le Journal de Médecine et de Chirurgie, February, 1911:

Laënnec et ses contemporains . . . . . E.-P. Benoit.
Rupture précoce de grossesse extrautérine, Eug. St-Jacques and Charles St. -Pierre.
Le sang en médecine légale . . . . Wilfrid Derome.

Dominion Medical Journal, February, 1911:

Salvarsan . . . . . Graham Chambers.

The Canadian Journal of Medicine and Surgery, March, 1911:

Observations on Fractures . . . . Herbert P. H. Galloway.
A Skin Eruption in Six Consecutive Cases of Poliomyelitis . . . . . Alan G. Brown.

The Western Medical News, January, 1911:

Difficult Labour . . . . . A. E. Archer.
Abnormalities and Freak Cases of Obstetrics . . R. Woods.

Medical Societies

ACADEMY OF MEDICINE, TORONTO

THE regular meeting of the Academy of Medicine, Toronto, was held Tuesday, February 7th. The speaker of the evening was Dr. Harvey Cushing, of Johns Hopkins. The subject of his paper, "Brain Tumours and their Surgical Treatment," was based on the results obtained in some two hundred cases treated in the Johns Hopkins Hospital in the past eleven years. To show the rapid advance made in recent years, Dr. Cushing stated that eighty-two of these had been treated in the last twelve months. The main portion of the address was divided into the three headings; (1) what the tumour does; (2) what it is; and (3) how it has been treated surgically.

The pressure symptoms, Dr. Cushing said, were the most important for early diagnosis, and the local symptoms were the most useful for the localization of the tumour. The lecturer dwelt only for a moment on the cardinal symptoms of headache and vomiting. Optic atrophy, he pointed out, was not a true neuritis, but was due to pressure under the optic nerve sheath and retina. If this pressure were relieved early in the disease, before there was infiltration and fibrosis, the condition cleared up rapidly. One of the earliest symptoms noticed, and the one which he had found most important for the diagnosis of incipient cases, was the decreased sensitivity of the eye to colours. Normally, the various colour perceptive fields are distinct in outline on the retina, and markedly different in size. The earliest symptom is the decrease in the blue field, and this is followed by the gradual decrease in all the colour fields, with a distinct interlacing of their outlines on the retina. This is important, as it occurs before the disc becomes choked, and is of the greatest aid in the early diagnosis of brain tumour. Occasionally the distension of the extracranial vessels is also found useful for early diagnosis.

Dr. Cushing dwelt upon the importance of remembering how much displacement and moulding can occur in the brain before any definite symptoms are produced. In many cases the cerebellum had been herniated through the foramen magnum. In a large number of cases there was also a tendency towards retention of the secretion of the posterior lobe of the pituitary body, which gives rise to characteristic symptoms, i. e., marked fatness, increased tolerance to carbohydrates, and loss of sexuality.

XUM

The chief classes of tumour found were gliomata andendotheliomata, arising from the meninges. Sacromata were rare. The treatment had been wholly operative. Dr. Cushing pointed out the dangers of lumbar puncture for the relief of intracranial pressure. In many cases the cerebellum has become partially herniated, and if the pressure is suddenly decreased on the lower or spinal side, further herniation and sudden death may result. In all cases for operation the scalp is not prepared till the operating room is reached. The primary object is a radical operation, if possible, but if this is not feasible, the operation becomes a palliative one, or in other words, a decompression is performed. A large area of dura is first exposed, and if intracranial pressure is apparent, a smaller opening is made in the dura near the lower edge of the exposed surface. When the pressure is thus relieved, a larger exploratory opening is made through the upper portion of the exposed dura. If the tumour cannot be found or removed, a smaller opening is cut out of the bone-flap, corresponding to the position of the small decompression opening in the dura. The large bone-flap is replaced and the wound sutured. In none of his cases has Dr. Cushing removed the large bone-flap, and if possible, he always has the smaller decompression opening under the protection of some thick muscle; e. g., the temporal muscle. The results have been striking. Many cases have been cured, and a large number have had relief from symptoms for months or years after a decompression has been performed.

Dr. Cushing next discussed the result of his recent work on the removal of the posterior lobe of the pituitary from dogs, but, as his time was limited, he was able to give only a very brief review. All the experiments had been carefully controlled by animals of the same sex, breed, and weight, and, where possible, animals of the same litter were used. In all animals so treated he has found marked fatness, overgrowth, and increased tolerance to carbohydrates. In adult animals there has been atrophy of the sexual glands and loss of desire. In the case of puppies the animals remained infantile and of a neutral type. From his results, he concluded that any disturbance in one ductless gland affected all the other ductless glands and disturbed the equilibrium of the whole body. Where an organ was secreting less than normal this was more marked; an overproduction was followed by a rapid elimination of the hyper-secretion.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

On February 10th, the Medical Board of the Royal Victoria Hospital invited the members of the society to a special clinic in the hospital. About one hundred and fifty members were present. This was the ninth meeting. The programme consisted in the exhibition of living cases, of specimens, of apparatus, *x*-ray plates; every department of the hospital was represented; over thirty living cases were presented and discussed, and an extensive series of *x*-ray plates, pathological specimens, calculi, apparatus for different conditions, foreign bodies from different organs, anatomical preparations, microscopical preparations, instruments, blood tests, high frequency demonstrations, was shown.

The tenth regular meeting of the society was held February 17th.

Pathological Specimens. Dr. L. J. Rhea, of the Montreal General Hospital, exhibited the following specimens: 1. Organs of the neck of a child of eight years, who died from extensive burns. All showed hyperplasia. 2. Syphilitic gumma of liver. Patient died of acute enteritis, after having eaten of canned lobster. Dr. Lapthorn Smith showed an ovarian cyst weighing thirty-two pounds, following a tubal pregnancy. Drs. Gardner and Evans discussed this case.

Demonstration. Dr. J. Kaufmann showed a living case on which Ellsburg's skin reaction for cancer had been performed. The woman was suffering from cancer of the œsophagus. Dr. Fry discussed the case.

Case Reports. 1. Typhoid fever, phlebitis, cholecystitis, cholangitis, operation, recovery. Dr. H. A. Lafleur read this case report, which was discussed by Drs. Armstrong and Martin. 2. Tubal pregnancy, discharged piecemeal through the vagina. Dr. A. Lapthorn Smith. 3. Carcinoma of the breast and axillary lymph glands, and tuberculosis of the cervical lymph glands, by Drs. G. E. Armstrong and L. J. Rhea.

Paper. The paper of the evening was read by Dr. E. W. Archibald on the Surgery of the Vascular System.

CANADIAN MEDICAL ASSOCIATION

The next annual meeting of the Canadian Medical Association has been fixed for the 7th, 8th, and 9th of June in Montreal. It will immediately follow the McGill convocation and reunion, when the new medical buildings of the university are to be formally opened.

XUM

It is expected that the coming meeting in Montreal will be more largely attended than any previous meeting, and that it will mark the revival of an enthusiasm for the organization of the profession in Canada.

Advantage is taken of this announcement to urge upon all intending contributors to the scientific programme the necessity of sending in the titles of their papers as soon as possible to the chairman of the programme committee, Dr. H. S. Birkett, 252 Mountain St., Montreal, or to the general secretary, Dr. Edward Archibald, 160 Metcalfe St., Montreal.

WINNIPEG CLINICAL SOCIETY

THE regular bi-monthly meeting of the society was held in the Medical Library, January 24th. Dr. Robson Nichols delivered an address on "Concealed Ante-partum Hæmorrhage." He did not consider that the text-books brought out the symptomatology clearly enough. He illustrated his remarks by a case which had lately been under his notice. Emphasis should be laid on the sign of constant pain during the early stage.

Dr. Lehmann showed a case which had recently been operated on for tuberculous kidney with secondary infection of the bladder. Dr. O'Brien then showed a case of tuberculosis of the bladder. Following these two cases, a general discussion took place on tuberculosis of the genito-urinary tract. Dr. Paling spoke on his experience with this condition in London. Dr. Lehmann replied, advocating always the removal of a tuberculous kidney, given assured evidence of the other being free from disease.

Dr. W. S. McDonald presented a boy, aged fifteen, weight 150 pounds, who had come under his care nine months ago, with a marked and disabling coxa vara. Rest and leg-weights had been the treatment. The result was good, there now being less than one-half inch real shortening. Dr. Gallaway criticized, saying that he preferred a modification of the Thomas' splint to allow of movement, as a condition of osteoporosis was to be feared in the bones of an immobilized joint. A general discussion followed. Dr. Lehmann showed a specimen beautifully illustrating the condition.

Tuesday, January 7th, was devoted to a symposium on scarlet fever. Dr. Meindl dealt with the ætiology and pathology, reviewing the work to date. Dr. Carscallen took up the symptomatology, and Dr. Geo. Fletcher, the special complications and their treatment. Dr. A. J. Douglas, chief of the city health department, dealt with diagno-

sis and treatment. He said that in Manitoba scarlet fever was a "cold weather" disease. He always insisted on retaining patients until the more resistant parts had completely peeled, no matter how long it took. The greatest safeguard against kidney complications was six weeks in bed, even in the mildest cases. Polyvalent anti-streptococci serum had given good results in his hands.

Dr. Mothersill exhibited a case of extensive keloid formation following a burn; and Dr. Hughes, a case of encysted hydrocele of the cord. Dr. Bercovitch then spoke on the subject of unlicensed midwives. The influx of foreign population into Winnipeg had been so great, and the damage being done by ignorant midwives was so appalling, that he thought the society should act in the matter. Dr. Bond brought up the subject of quacks and their advertisements. Both matters were referred to the standing committee for action.

VALLEY MEDICAL SOCIETY

THE Valley Medical Society, comprising the counties of Annapolis, King's, and Digby, held its midwinter meeting at Bridgetown, January 31st. Those present were: Dr. P. N. Balcom, Aylesford; Drs. March and McKeown, Berwick; Drs. Moore, Miller, and Woodworth, Kentville; Dr. Morse, Port Williams; Dr. A. W. DeWitt, Wolfville; Dr. John Stewart, Halifax; Drs. Miller, Sponagle, and A. P. Reid, Middleton; Dr. L. R. Morse, Lawrencetown; Drs. DeBlois, Armstrong, and Dechman, Bridgetown; Dr. Robinson, Annapolis; Dr. McDonald, Meteghan.

After dealing with routine business, and making changes in the constitution and by-laws, consequent on Digby County practitioners coming into the society, the following papers were read: "The Relation of the Medical Profession to the Public," by Dr. P. N. Balcom, Aylesford; "Acute Epiphyseitis," by Dr. John Stewart, Halifax; "Interesting Work as seen in the Clinics of Germany and Switzerland," by Dr. C. E. Avery DeWitt, Wolfville; "Poliomyelitis," by Dr. M. E. Armstrong, Bridgewater.

At the evening session animated discussions took place dealing with the Provincial Sanatorium at Kentville, the Victoria General Hospital at Halifax, and THE CANADIAN MEDICAL ASSOCIATION JOURNAL. Regarding the sanatorium, resolutions were passed expressing appreciation of the work of the superintendent, Dr. A. F. Miller; praising the Nova Scotia government for what it has done so far in the fight

XUM

against tuberculosis; and urging increased accommodation and certain modifications in the present policy of dealing with applicants. A lengthy resolution, setting forth the views of the members of the society with respect to the Victoria General Hospital was carried unanimously; and copies were ordered to be sent to the commissioners of the hospital, and to the various county societies. The society expressed a hearty approval of the issue of THE CANADIAN MEDICAL ASSOCIATION JOURNAL, and pledged its support. The next meeting will be held in June, 1911, at Middleton.

LUNENBURG-QUEENS MEDICAL SOCIETY

THE regular midwinter session of the Lunenburg-Queens Medical Society was held at Lunenburg, Wednesday, February 22nd. It was found necessary to have an evening, as well as an afternoon session.

At the afternoon session after the regular and routine business of the meeting had been disposed of, two new members were elected, Dr. Gordon MacLellan, of Mahone, and Dr. Lawrence Braine, of Chester. Action was taken on resolutions passed by the Valley Medical Society at the regular meeting January 31st. These resolutions had to do with the management of the Victoria General Hospital, and fees for expert evidence by medical men. Dr. W. N. Rehfuss, of Bridgewater, then read a paper on "Personal Experiences with the Various Vaccines." The concluding paper was "Three Hours in Trudeauville," by Dr. L. T. W. Penney, of Lunenburg.

In the evening, Dr. A. F. Miller, superintendent of the Provincial Sanatorium, Kentville, read a paper on "Tuberculin, its Diagnostic and Therapeutic Value in Tuberculosis." This paper was fully discussed, and many ideas were exchanged as to the proper steps to be taken in order to arrest the progress of tuberculosis in Nova Scotia. It was unanimously agreed that much more might be accomplished, and that although the government of Nova Scotia was to be commended for what it had already done, the sanatorium at Kentville is inadequate and must be enlarged. A deputation, consisting of Dr. W. N. Cochran, of Mahone, Drs. Rehfuss and Churchill, of Bridgewater, Dr. W. H. Macdonald, of Rose Bay, and Dr. L. T. W. Penney, of Lunenburg, was appointed to confer with the other provincial medical societies to draw up a suitable memorial, and, in conjunction with the representatives of those other societies, to wait upon the government at Halifax, and urge the necessity of improvements and alterations.

XUM